Philatelic Invention in the United States: 1861 - 1881

Patents and Experiments to prevent the Reuse of Postage Stamps

Purpose

The purpose of this exhibit is to tell the story of the philatelic invention that took place in the United States between 1861 and 1881 to create a postage stamp that could only be used once.

Scope

The exhibit opens with a Prologue: the use of stamps as money – because it was the fraudulent use of stamps for coins that drove the official concern about reuse. In seven chapters, the exhibit then tells the story of the essays, proofs, and stamps that followed – beginning with **Leeds's unpatented envelope** in 1861 and ending with the only patent that led to widely used stamps – **Steel's "grill" patent**. An Epilogue shows a set of the the first definitive series that was not subject to testing post-1861, the Bureau definitives of 1890.

Exhibit Plan

Charles Steel's "preferred" stamp

Frame: Lithographic printing. Center: blank, embossed.

Imperf, gummed
Black on white wove

Imperf, gummed
Black on yellow-tinted

Importance

The 1860s and '70s were unique for their postal challenges in the United States. On the one hand, the POD had to provide an organised service against the backdrop of the Civil War. On the other, it had to prevent the fraudulent reuse of stamps for money or postage. Philatelic invention flourished as entrepreneurs saw an opportunity to make money from stamps that could only be used once. The most successful patent, Charles Steel's patent for the "grills," led to some of the most sought after stamps in North American philately.

Research

This exhibit is built on original research (highlighted in **bold blue**). My discoveries include:

- The **Loewenberg Stamp Company** and its role in promoting Loewenberg's philatelic experiments p. 30
- Proof that there are **only three types** of Gibson *safety network overprint* ps. 48/9
- The discovery of the link between the **1864 Harmon patent** and the bedspring essays p. 51
- Research **proving the links** between unattributed essays and their underlying patents many pages
- The **complete story** of the "grills" based on patent analysis and archival documents ps. 104-127

Important items

Unique or important items are boxed in **black** and **dark red**. Census numbers are noted in a small bold script. Below are **five** of the most important items:

- The essay that most truly represents the **Bowlsby patent** p. 16
- Sets of the Bierce-Spencer patent that reflect **ABNC's takeover of NBNC** in 1879 p. 23
- MacDonough's agenda-setting letter of 1863 about the **Gibson** and **Loewenberg** patents p. 44
- The **earliest documented use** of the A-grill on cover, **13 August 1867** p. 110
- The essay **signed by Steel** and co-signed by NBNC to recognize Steel as "**inventor of the grill**" p. 119

Introduction

Since 1859, newspapers had sensationalized the POD's annual losses by claiming that they were caused by the fraudulent reuse of stamps. But it wasn't until 1862, when a shortage of coins had caused stamps to be used for currency, that Congress or PMG Blair showed any concern. See a timeline of developments in that year:

- 16 July: Congress passed "*An Act to punish the fraudulent Sale or Use of Postage Stamps*"
- 17 July: Congress passed "*An Act to authorize Payments in Stamps*"
- 1 August: the Treasury's new fractional currency was first issued to Union soldiers
- 12 August: Gault was granted a patent for his encased postage stamps
- 1 December: Blair reported that the POD were experimenting with stamps that could only be used once

An envelope of stamps used for currency

Issued by **J Leach**: a stationary shop in New York

Free money from stamps

Gummed stamps tended to stick to each other, so ungummed stamps were widely used.

The problem was that previously used stamps were easy to clean for this purpose.

The envelope was supposed to contain 50c in stamps

John Gault's encased currency

Examples: 1c issued by **Ayer's pills**; **3c** issued by **Bailey & Co.**

Patent description:

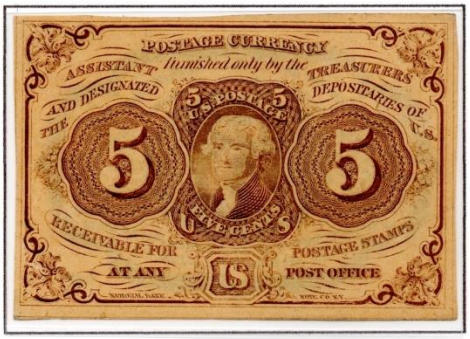
Patent 1,627 was for "*a simple metallic circular case, to contain the government stamps...*"

From Gault's letters patent dated ***August 12, 1862***

Examples of Fractional Currency: mint

Printed by the American Bank Note Company

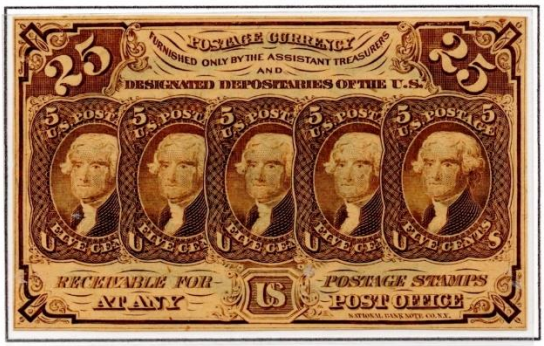
5c note: *Dark brown* on *yellow wove paper* using the 1861 5c stamp

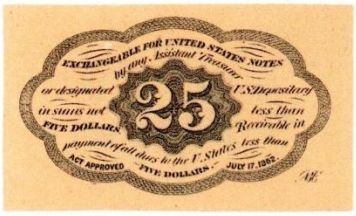


10c note: *Green* on *white wove paper* using the 1861 10c stamp

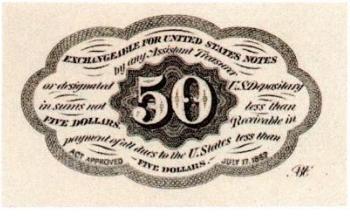
Scans of the back
Dimensions reduced by 30%
All printed in black

25c note: *Dark brown* on *yellow wove* showing five of the 1861 5c stamp





50c note: *Green* on *white wove* showing five of the 1861 10c stamp



Because of inflation, the metals in coins became worth more than the coins themselves. As a result, the public started hoarding coins. In August 1862, the Treasury got permission to issue paper notes based on the images of the 1861 5c and 10c stamps. The first notes were distributed to the public on 21 August.

Key dates

1861 (19 October): *Earliest example of Leeds envelope*

1862 (14 January): *Norton's blade canceller*

1865 (26 December): *Bowlsby's "tear off" stamp*

Circa **1866-1870**: *The "exploding" stamp*

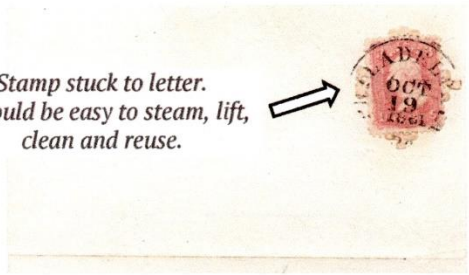
1876 (23 May): *Dummer's "tab" stamp*

1877 (10 July): *Bierce-Spencer: cancel with a brush*

1861 1862 1863 1864 1865 1866 1867 1868 1869 1870 1871 1872 1873 1874 1875 1876 1877

1861: Lewis Leeds's invention – an envelope to prevent reuse

In 1861, Lewis Leeds's wife wrote him a letter in **a new kind of envelope** that Leeds had invented to prevent the fraudulent reuse of postage stamps. This chapter is about his envelope and other methods of stamp destruction through cancellation.



Stamp stuck to letter. It would be easy to steam, lift, clean and reuse.

Maltese Cross

Backlit scan

The **Maltese Cross** lattice was created for Leeds and his first partner, Vaux, by **George Nesbitt**

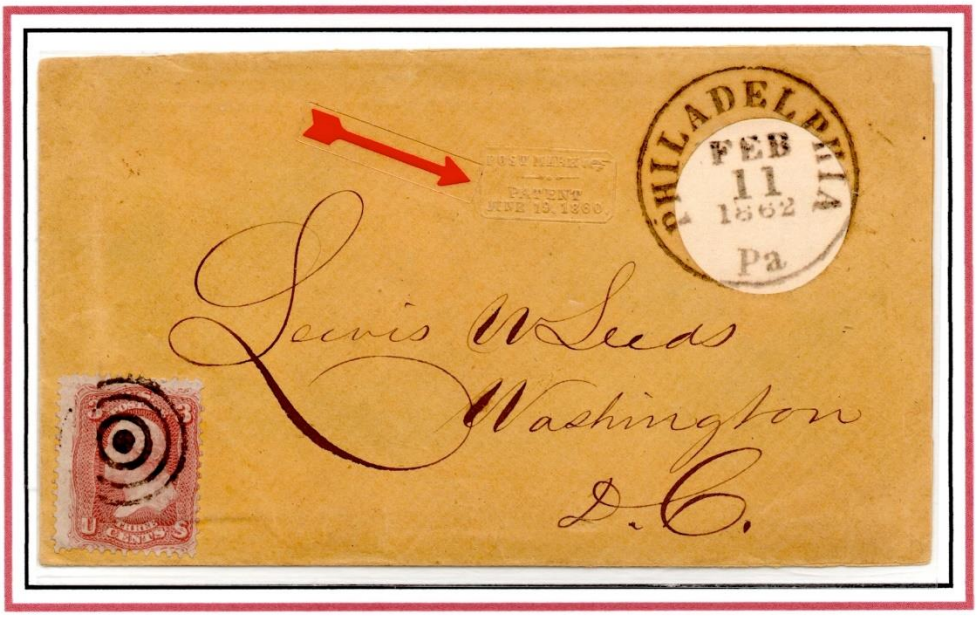
'My dearest husband

'... we arrived safely at Mom's just as the clock struck eight... the country was so beautiful that I did not mind the long ride.'

1862: The Leeds brothers were forced to buy Morison's patent

Morison's envelope: to record the date on which a letter was posted, on its contents

Contained Barclay Leeds's **unique letter** to his brother Lewis
... recording the Leeds brothers purchase of the Morison patent

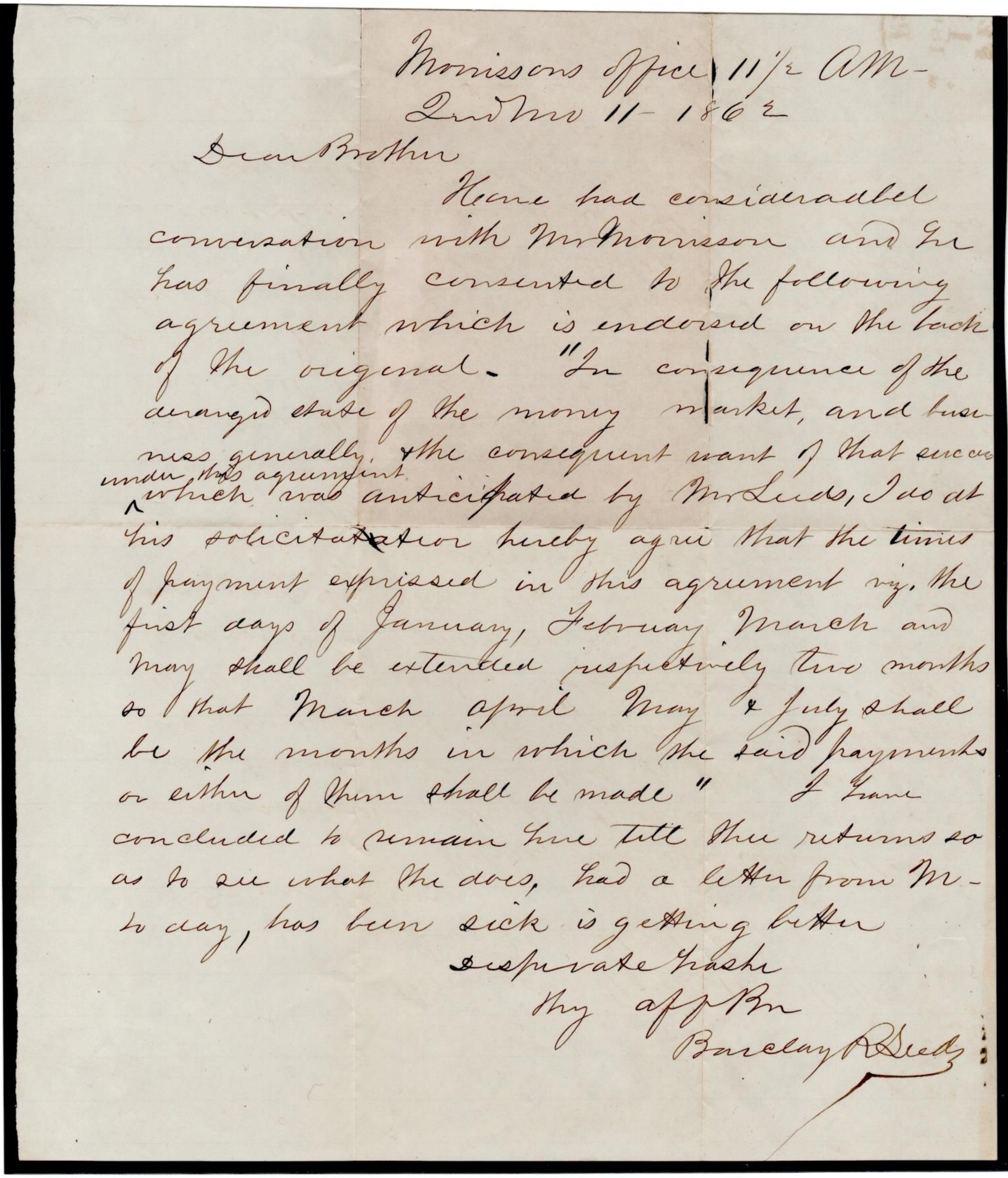


Lewis Leeds had tried to patent an envelope with a lattice-type opening in about 1861. It was rejected because (so the patent office said), it was not different from **Morison's 1860 envelope**. The Leeds brothers responded by **buying Morison's patent in 1862** for $1,000 (that is about $25,000 today).

This envelope illustrates Morison's **original purpose** which was to secure proof of the date of a legal agreement with a post office date stamp. Leeds changed the design and added reuse prevention in a William Lyon's circular dated 1862: ***'Securing to the Government the destruction of the stamp in opening the letter...'***

Morrissons office 11 ½ am
February 11 – 1862

Have had considerable conversation with Mr Morrisson and he finally consented to the following agreement which is endorsed on the back of the original (patent).



Morrissons office 11½ AM –
2nd Mo 11 – 1862

Dear Brother

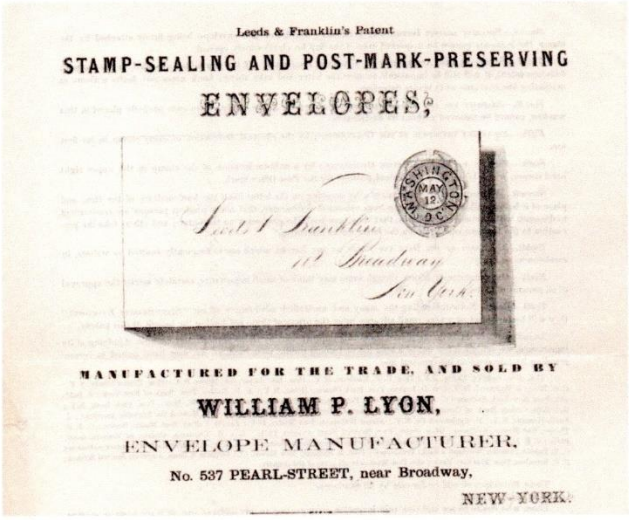
Have had consideraddel conversation with Mr Morrisson and he has finally consented to the following agreement which is endorsed on the back of the original. "In consequence of the deranged state of the money market, and business generally, & the consequent want of that success under this agreement which was anticipated by Mr Leeds, I do at his solicitatation hereby agree that the times of payment expressed in this agreement viz. the first days of January, February March and May shall be extended respectively two months so that March April May & July shall be the months in which the said payments or either of them shall be made" I have concluded to remain here till thee returns so as to see what thee does, had a letter from M– to day, has been sick is getting better

desperate haste

thy aff Br

Barclay R Leeds

The 'Lyons-Leeds' circular advertising the use of the envelope **to prevent reuse**



Leeds & Franklin's Patent

STAMP-SEALING AND POST-MARK-PRESERVING

ENVELOPES;

MANUFACTURED FOR THE TRADE, AND SOLD BY

WILLIAM P. LYON,

ENVELOPE MANUFACTURER,

No. 537 PEARL-STREET, near Broadway,

NEW-YORK.

Scan of the front of the circular

Excerpt from the circular below

....

Fourth – SECURITY FOR THE PRE-PAYMENT OF POSTAGE; as ***the stamp*** *when once properly placed in this window,* ***cannot by removed without its destruction***

Fifth – ADVANTAGE THEREOF TO THE GOVERNMENT; by the effectual ***destruction of every stamp in its first use***

....

Second.—Security against Impertinent Intrusion ; the letter and envelope being firmly attached by the stamp, the inclosure cannot be inspected even if the flap be clandestinely opened.

Third.—Safety against Abstraction of Valuable Inclosures. If the flap be left unsealed, or opened with felonious intent, it will still be impossible to open the letter and take thence bank notes and drafts without so mutilating the envelope as to insure detection.

Fourth.—Security for the Pre-payment of the Postage ; as the stamp, when once properly placed in this window, cannot be removed without its destruction.

Fifth.—Advantage therefore to the Government ; by the effectual destruction of every stamp in its first use.

Sixth.—Facility to the Post Office Operations ; by a uniform location of the stamp in the upper right hand corner, which is the most convenient position for the Post Office mark.

Seventh.—Verification of the Mailing ; by securing on the letter itself the *legal evidence* of the time and place of it being mailed. This has long been esteemed so desirable, that many prudent persons are constrained to dispense with the use of envelopes, that they may have the post mark on the letter ; and others take the precaution to pin the envelope again on the letter for identification.

Eighth.—Certainty of the Date and Place on the Letter, which are so frequently omitted by writers, in carelessness or hurry.

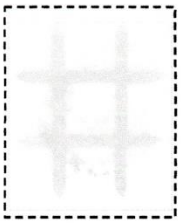
Ninth.—Ornamentation ; which, though some may think of small importance, certainly merits the approval of all persons of taste.

Tenth.—Cost. Notwithstanding the many and unrivalled advantages of our "Stamp-Sealing Envelopes," they will be furnished at a very small advance upon the prices of those not having the benefit of this patent.

As indicative of the estimate placed upon this improvement by those perhaps best capable of judging of its importance, we subjoin a few out of a long list of leading public men, bankers, &c. who have united in recom-

Types 1A (squares) and **Type 2** (diamond)

Type 1A lattice: note the embossed patent claim on the envelope



Type 1A
Backlit scan

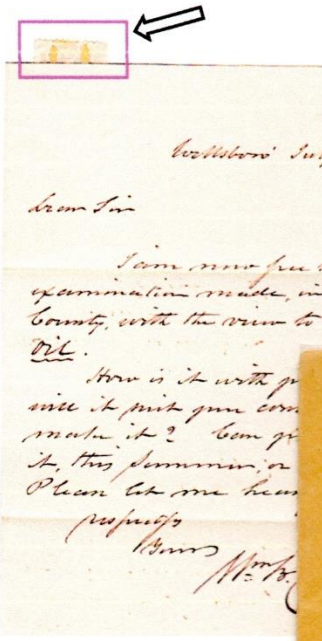
Type 2 lattice: an envelope that combines Morisons's and Leeds's ideas

Three recorded. This is the **only one known** in private hands

Type 2
Backlit scan

This important envelope combines Morison's and Leeds's ideas. The opening in the center is for dating the contents. The "diamond lattice" opening is for the stamp. Only two other examples have been recorded. Both are in the Haverford collection, Haverford College Library.

Type 1A: postally used examples (with enclosed letters)



Scan of the stamp stuck to the letter

Taking out the letter successfully ripped the stamp from the envelope, but didn't destroy it. The stamp could still be steamed off the letter, cleaned, and reused.

This pair easily survived the letter's extraction.

Destructive cancelers: intended to mutilate the stamp

Cancelling devices tried to prevent reuse by mutilating the stamps in various ways. Although they are referred to as "patented," many are unpatented and anonymous. Here I show **the various types**: duplex with blades, cutting circles, blades combined with pins, circles and thick pins.

1862: Norton's duplex patent canceler: blades for cutting the stamp

"The nature of my improvements consists in so constructing the canceling-stamps that the same shall cut the postage stamp without injury to the contents of the envelope."

12 blade duplex used from 1861-63

Philadelphia: April 2, 1863

12 blade duplex used from 1861-63

Philadelphia: April 30, 1863

Regulations required the CDS to be clear of the stamp. In this case, the position of the stamp made cutting impossible

Destructive cancelers: scraping, cutting, punching

Cutting circle and thick wheel
used from 1863-65

Buffalo, New York: May 18, 1863

Short blades and pins
used in 1863

Fall River, Mass: November 3, 1863

Circles and thick pins
Date unknown

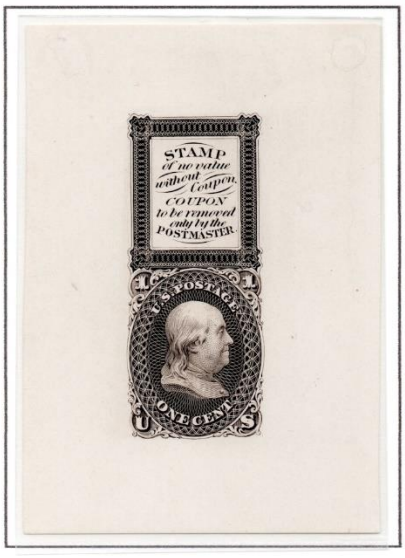
Orfordville, New Hampshire:
March 26

1865 Bowlsby patent 51,782: Cancel by tearing off an ungummed portion of the stamp

In 1859 Charles Rowland of Illinois had proposed a stamp that would be canceled by tearing it. This would prevent the stamp from being reused. In 1865, George Bowlsby patented the idea.

Die on India on card: *Blue*

Die on soft card: *Blue*



Die on India
Black

Die on India
Red orange

Patent description:

Patent 51,782 was for a stamp with a tab. To quote, *'... apply the adhesive to the upper half of the stamp... leaving the lower half bear... the lower half is torn off by the postmaster before it enters the mail.'*

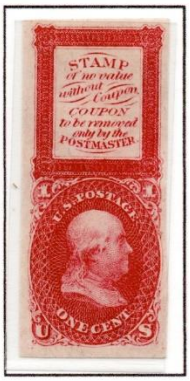
From Bowlsby's letters patent dated ***December 26, 1865***

1865 Bowlsby patent 51,782: Cancel by tearing off an ungummed portion of the stamp

Imperf plate proofs

On **Pelure**
Red, gummed

On **India**
Black, ungummed



On **white wove**
Red, gummed

On **white wove**
Red, C grill, gummed

Perf 12: blue and red on stamp paper
The stamp is gummed, the coupon is ungummed,

Scan of the back

Ungummed

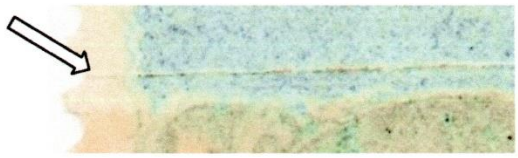
Gummed

No Separation

Separated by Roulettes

Separated by **Perf 12**

A high resolution scan shows the roulettes




STAMP
of no value
without
Coupon.
COUPON
to be removed
only by the
POSTMASTER.
U.S. POSTAGE
ONE CENT


STAMP
of no value
without
Coupon.
COUPON
to be removed
only by the
POSTMASTER.
U.S. POSTAGE
ONE CENT

1868/9: one of only two essays that **truly represents** Bowlsby's patent

Bowlsby illustrated his patent with a crude drawing of the 1861 3c stamp (**Fig. 1** below). It involves a single stamp – gummed on the top half and perforated through the middle for easy tearing.

Most Bowlsby essays involve a gummed stamp and an ungummed tab. They may derive from his patent, but they are not true to it. The margin block of four on this page is one of only two essays that accurately represent Bowslby's patent. The other is a block of the 1873 CBNC's 1c stamp.

1868 3c E grill: only the top half of each stamp is gummed

One recorded for the E grill

1868 3c Rose
Perf 12

Bowlsby's patent
Required a split stamp with only half gummed. In this case, the top is gummed.

Research: this essay must date to 1868 or 1869. It is on the 3c E grill and is one of only two essays that conform exactly to the characteristics specified in Bowlsby's patent.

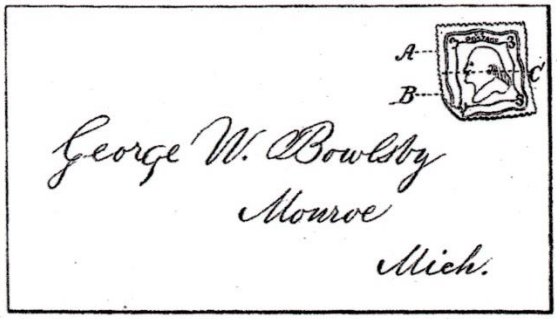
Fig 1 from Bowslby's patent

Quotes from the patent

'A is the upper half adhering to the letter'

'B is the lower half to be torn off by the postmaster'

'C is the line of perforations across the middle



Unknown date: tear off stamp essays of unknown origin

Three cent black and blue on green: imperf, stuck to white card

One set recorded

A slit across the upper middle of each stamp makes it easier to tear off the top half

Two cent and three cent black and bronze: imperf, gummed

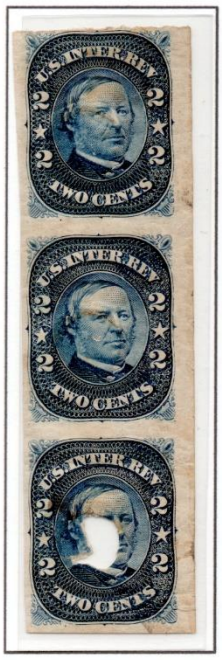
Two of **three** or so sound examples

Punched out '3'

1864-76: "exploding" stamps – patenter unkown

1866-70: the revenue essay precursor to the 1876 essay

The portrait is of Hugh McCulloch (Secretary of the Treasury)



2c Internal Revenue

Unissued design

Full-size scan of the back

Blue

Imperf, gummed

How they were made

Bullet makers used mercury fulminate to ignite the gun powder in bullets.

These stamps have caps of mercury fulminate enclosed in them. The idea is that they would explode if cancelled with a hammer.

Origin

Turner attributed the revenue essay to the National Currency Bureau but Schwartz points out that it bears similarities with NBNC designs.

No-one knows who came up with the idea.

1876: 1c light blue with mercury fulminate cap

e PF

1876 1c

Light blue

Perf 12, gummed

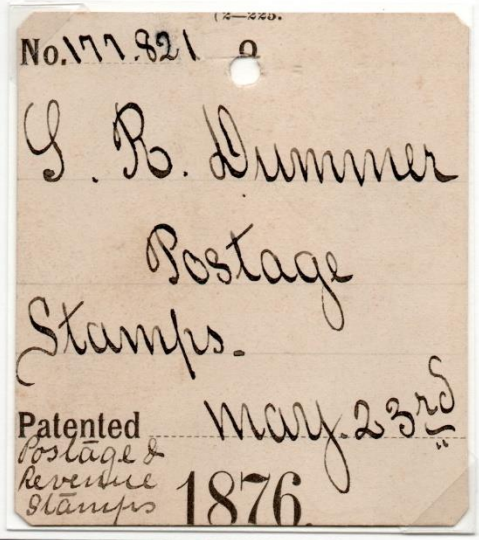
A magnified scan of the front shows the cap.

1876: To partially destroy the stamp in cancelling

Illustration from Dummer's patent:

"a" is a slip of paper that protrudes through a slit from the back of the stamp to the front.

Cancel the stamp by pulling on the slip and tearing out a piece of the stamp.


No. 177,821

G. R. Dummer

Postage Stamps.

Patented May. 23rd

Postage & Revenue Stamps 1876.

The unique model from Dummer's submission


Specimen Model

Saml. R. Dummer

Postage Stamp

Patent description:

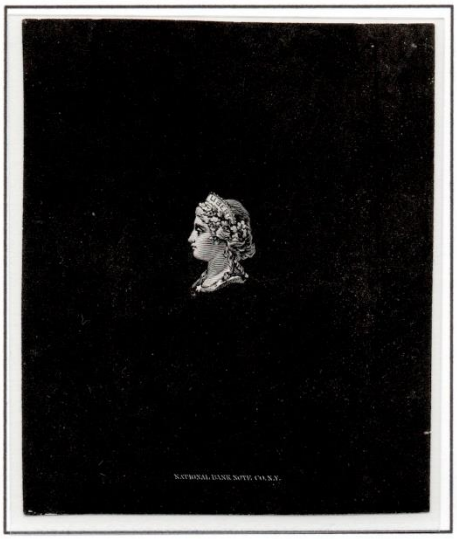
For '*... a stamp so prepared that when a piece of paper is pulled ...* ***a portion of the stamp will be removed...***'

From Dummers's letters patent dated ***May 23, 1876***

1877 Bierce-Spencer patent 192,968: part of the stamp is raised and perforated

In 1877 William Bierce proposed a stamp with a perforated raised center. Canceling it with a wire brush was supposed to tear the raised center.

NBNC used its Liberty Head essays to test the patent



Vignette on black background

Stiff yellowish wove paper

Plate proofs

Green

On transparent white wove, imperf, ungummed

On white wove, perf 12, gummed

Green

Red

Patent description:

Patent 192,968 invented by William Bierce with 50% assigned to John Spencer involved *'... a paper stamp, a portion of which (preferably the center) is raised above its contiguous parts, and is either wholly or partially surrounded by perforations...'*. By passing a brush over the stamp *'... the central portion... will be torn.'*

From Bierce's's letters patent dated ***July 10, 1877***

Die proofs for the Liberty Head

Essays signed by the engravers Jones and Ronaldson

Each essay is **the only recorded example** that has been **signed**

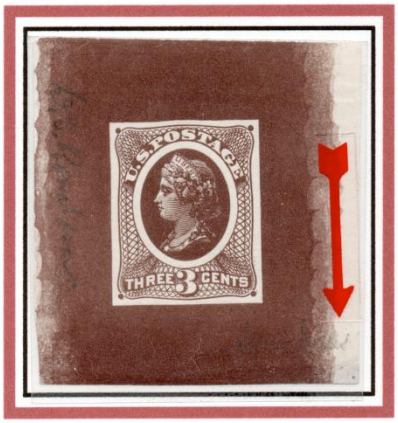
Die on transparent white wove paper

Pale blue-purple

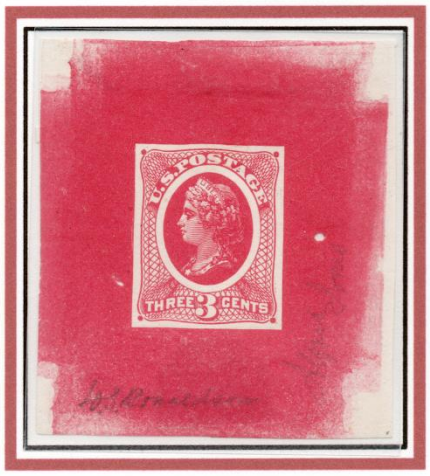
Die on stiff yellowish card

Black

On proof paper



Red-brown



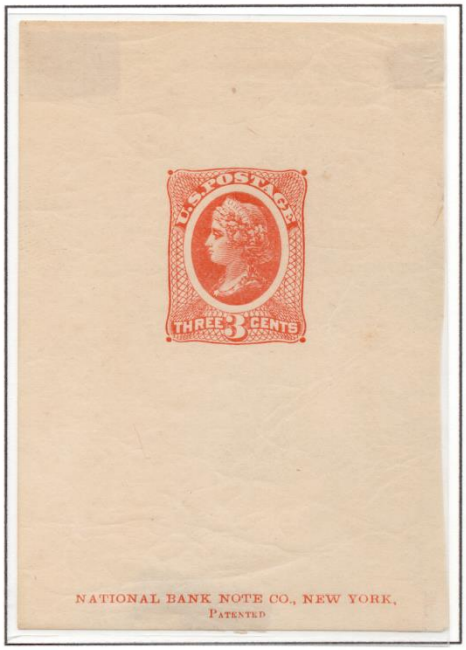
Carmine

Blue-green

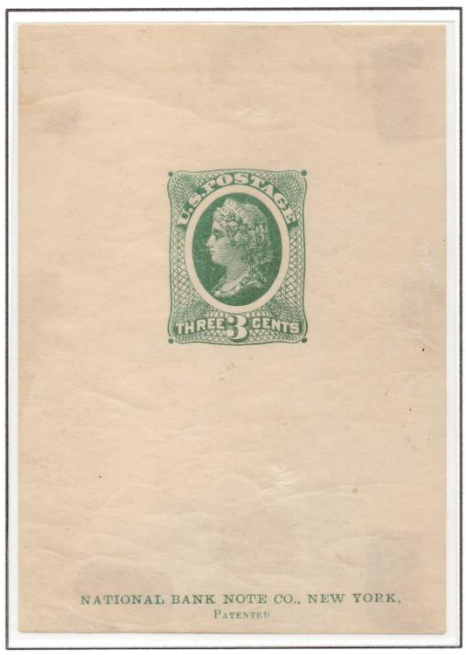
Imperf proofs – with an imprint and the **patent claim**

A selection of shades on white wove with imprint. Imperf, ungummed.

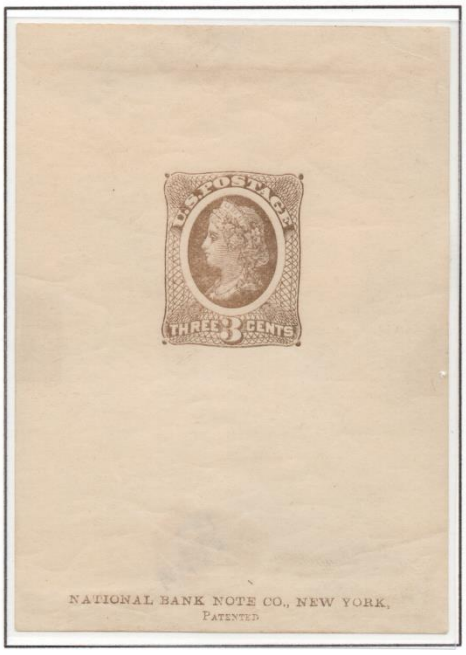
Dim orange-red



Olive brown



Green



Brownish gray

Dull yellow-orange

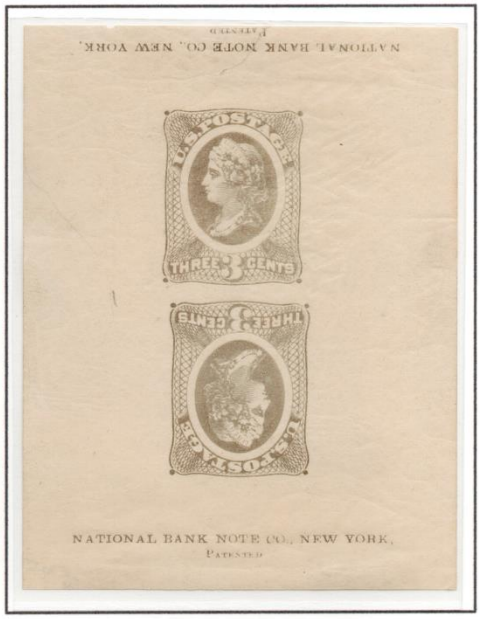
The tête-bêche variety: a complete set, imperf and ungummed

The word '**patented**' below the NBNC imprint suggest that these essays should be attributed to the **Bierce-Spencer** patent.

Carmine

Orange

Dull Green-grey



Dull Green-grey

Buff

Pale lilac

Yellow

Dark Orange-brown

Essays with perforated centres

Approved perforated designs signed by the engravers "AJ" (Jones) and "D. S. R." (Ronaldson)

The **only recorded set** signed by the engravers: Jones and Ronaldson

Blue

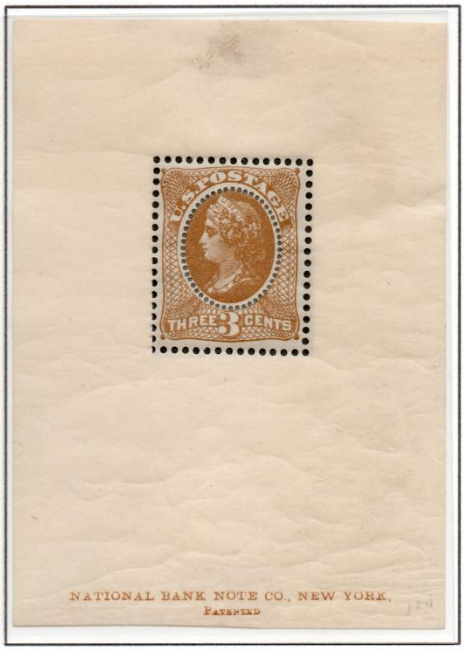
Red

Die on white wove pasted onto card.

Research: contrary to the patent, the center was never raised; only perforated.

Dull olive green

Scarlet



Light brown

1877 Bierce-Spencer patent 194,212: a modified version of patent 192,986

There was a problem with the first patent: the gummed center, although perforated, wasn't easy to cancel because it stuck to an envelope.

A month after patent 192,986, Bierce filed for a second patent – 194,212. it was a modified version of the first patent which specifed that **the center should be ungummed**.

This is **the only recorded essay** for patent 194,212.

Perf 12,

Frame gummed, vignette ungummed.

Research: this model combines the frame for the **Liberty Head** with a **Washington** vignette designed by **Draper, Walsh & Co.** for the 1851 issue.

The frame is gummed. The vignette is ungummed. **The model therefore conforms to patent 194,212.**

Patent description:

Patent 194,212 invented by William Bierce with 50% assigned to John Spencer involved *'... a stamp having a portion of its back ungummed... The cancellation may be effected in a variety of ways by the use of any instrument* (to) *cut, tear, or remove it...'*

From Bierce's's letters patent dated ***August 14, 1877***

1879: ABNC takes over NBNC and all its intellectual property

One NBNC set recorded:

A presentation card that may predate the merger with ABNC in 1879

Orange *Light red* *Blue-green* *Scarlet*

One ABNC set recorded:

ABNC uses the Bierce-Spencer essays to lay claim to the intellectual property of NBNC

Light gray *Light brown* *Light red* *Blue-green*

Key dates

1863 (3 November): *Loewenberg's 1st decal patent*

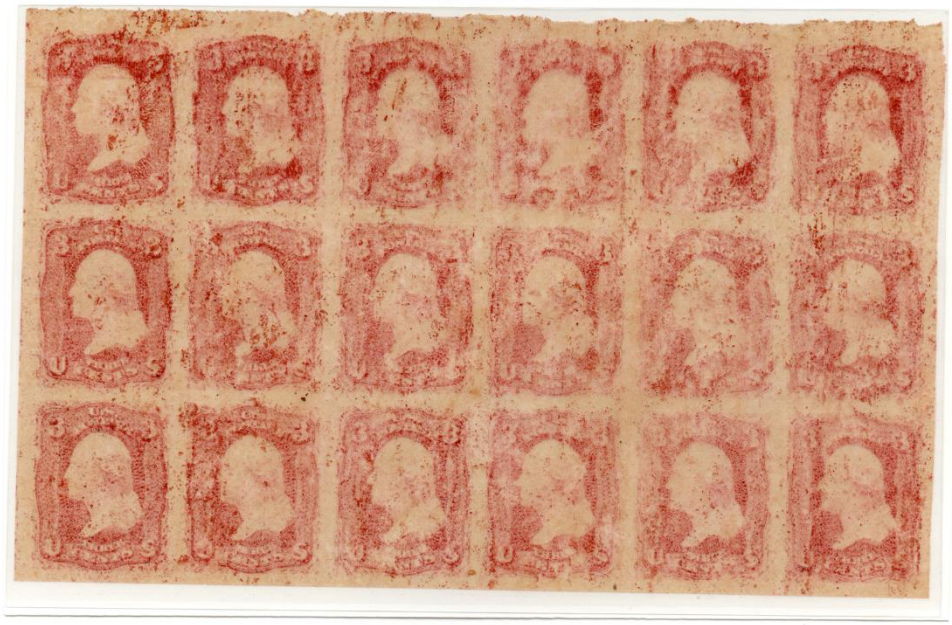
1866: *Prussian parcel stamps*

1861 1862 **1863** **1864** 1865 **1866** 1867 1868 1869 1870 1871 1872 1873 1874 1875 1876 1877

1864 (15 November): *Loewenberg's 2nd decal patent*

Henry Loewenberg's 1863 patent 40,489 for a "*Process for transferring prints*" was the first in the USA for a **"self-cancelling"** stamp. Decals had been invented in England in about 1750. Loewenberg patented them in the USA in 1963.

1863 Loewenberg patent 40,057 – for a stamp printed under the gum of transparent paper



1861 3c rose

Research: the first two printings were left ungummed.

According to correspondence in the Brazer archive, Loewenberg stormed out of NBNC **in November 1863, accusing it of incompetence and an unwillingness to cooperate.***

Patent description:

Patent 40,489 was for transferring a design from transparent paper to any surface by printing the design on the back of the paper; then applying *'an adhesive substance over the printed characters...'* to ensure that *'... the design, together with the adhesive..., will adhere to the surface on which said design has been transferred...'*.

From Loewenberg's letters patent dated ***November 3, 1863***

* Hofmeyr, Jan (2019), *'What the Brazer-Finkelburg Archive tells us about the Loewenberg Essays: 1863-66s'*, Chronicle 71: 1, February

1863 Loewenberg patent 40,057 – for a stamp printed under the gum of transparent paper

Research: these essays have been wrongly described as gummed since Mason (1911). I have proven that whole plates were left ungummed because of the poor quality of the printing.

From plates of the 1861 issue: Loewenberg's transparent paper, imperf, largely ungummed

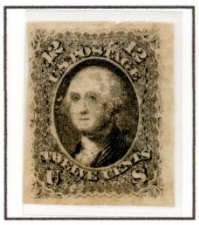
3c Pink

3c Lake on green

3c Lake on blue

3c Blue

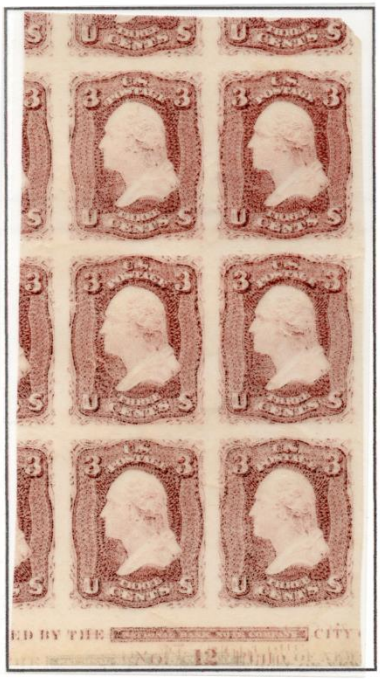
2c Black on pale rose



12c Black

24c Lilac on pale green

30c Orange on blue green



3c Brown

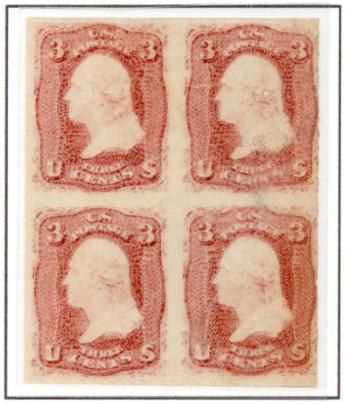
10c Green on pale rose

30c Orange

3c Lake Imprint plate block

1863 Loewenberg patent 40,057 – for a stamp printed under the gum of transparent paper

The largest known multiple of the 1861 2c 'decal'
Black, imperf, left ungummed



1861 3c 'decal'
Rose, imperf, left ungummed

1861 5c 'decal'
Brown, imperf, left ungummed

1861 90c 'decal'
Blue, imperf, gummed

1861 24c 'decal'
Gray, imperf, gummed

1865-6: The Loewenberg Stamp Company – patents 40,489 and 45,057, 'rod & axe' design

Research: by 1865, Loewenberg had formed a company (**Loewenberg Stamp Company**) to house his patents. It was this company that produced the 'rod & axe' design.*

Unique die and plate proof of the 'rod and axe' design

One recorded

1865 die: 3c pink
Shown from the back

Lithographic printing on transparent paper

Signed by D.H. Craig of the NBNC

1865 plate proof: 3c beige
Perfed and gummed

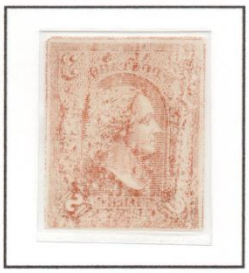
One recorded

*Signed by **Loewenberg** to assert ownership*

A test of the decal process

Research shows how the decal works. I have proven that Loewenberg used these stamps to test both of his patents, but we cannot tell which without destroying the stamps.

Blue



This test shows how the stamp is destroyed by attempts to float it off an envelope for cleaning

Patent description:

A year after being granted **Patent 40,489** for decals, Loewenberg was granted **Patent 45,057** for self-canceling stamps: *'The nature of my invention consists in applying an adhesive substance to transparent paper..., and afterwards producing (a) design upon the surface of the said adhesive...'.*

*From Loewenberg's letters patent dated **November 15, 1864***

* Hofmeyr, Jan (2019), *'What the Brazer-Finkelburg Archive tells us about the Loewenberg Essays: 1863-66s'*, Chronicle 71: 1, February

1865-66: Loewenberg's 'rod & axe' design: they came in sheets of 25

Imperf, ungummed, lithographically printed
Printed in reverse so the image would face forward when seen through transparent paper

A complete sheet of the **Black** color

1865-6: Loewenberg's 'rod & axe' design: imperf, gummed

Spaced for perforations

Brownish orange

Blue

Tests for transparency

Pale red
Thin and transparent

Red violet
Thicker, more opaque

Orange red
Thick, opaque

1865-6: Loewenberg's 'rod & axe' design: imperf, gummed

Shades shown from the gummed side

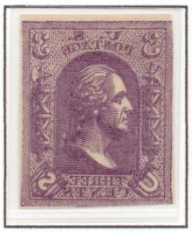
Light Violet

Brown red

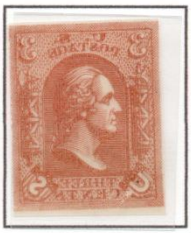
Dark Gray

Gray Brown

Purple



Orange Brown



Red

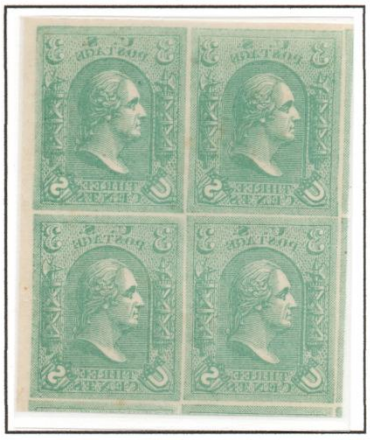
Light Orange

Gray Purple

Mauve Red

Deep blue

Light green



1865-6: Loewenberg's 'rod & axe' design: imperf, gummed

A complete sheet of the **Dark Green** color

1865-66: Loewenberg's 'rod & axe' design: the rarest shade is **Gold**

One complete sheet **recorded**

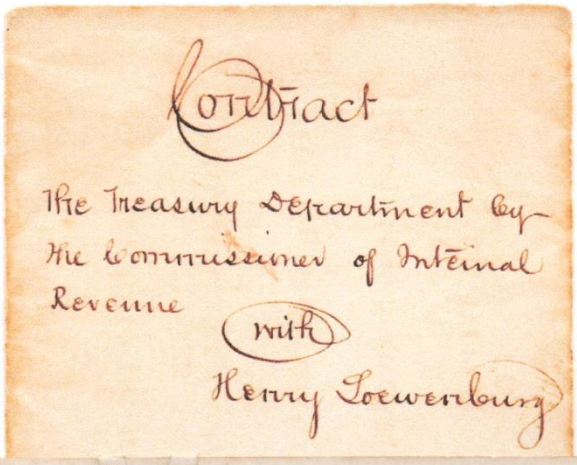
1865-66: Loewenberg's 'rod & axe' design: perf 12, gummed

Five perforated sheets **recorded**

A pencil annotation is just visible (**red arrow**). It says 'Lowenberg patent 1867'. It spells his name incorrectly and is wrong about the patent date.

This is one of the ways in which cataloguing errors accumulated.

1864: Original copy of the contract


Contract

The Treasury Department by the Commissioner of Internal Revenue with Henry Loewenburg

Full scale scan of the front

Loewenberg's contract with the Treasury:

"This Agreement, made this twenty-eighth day of March (1864)... between the Treasury Department of the United States... and Henry Loewenberg.."

The contract was for the supply of one million 2c bank check stamps based on patent 40,489 in five different colors

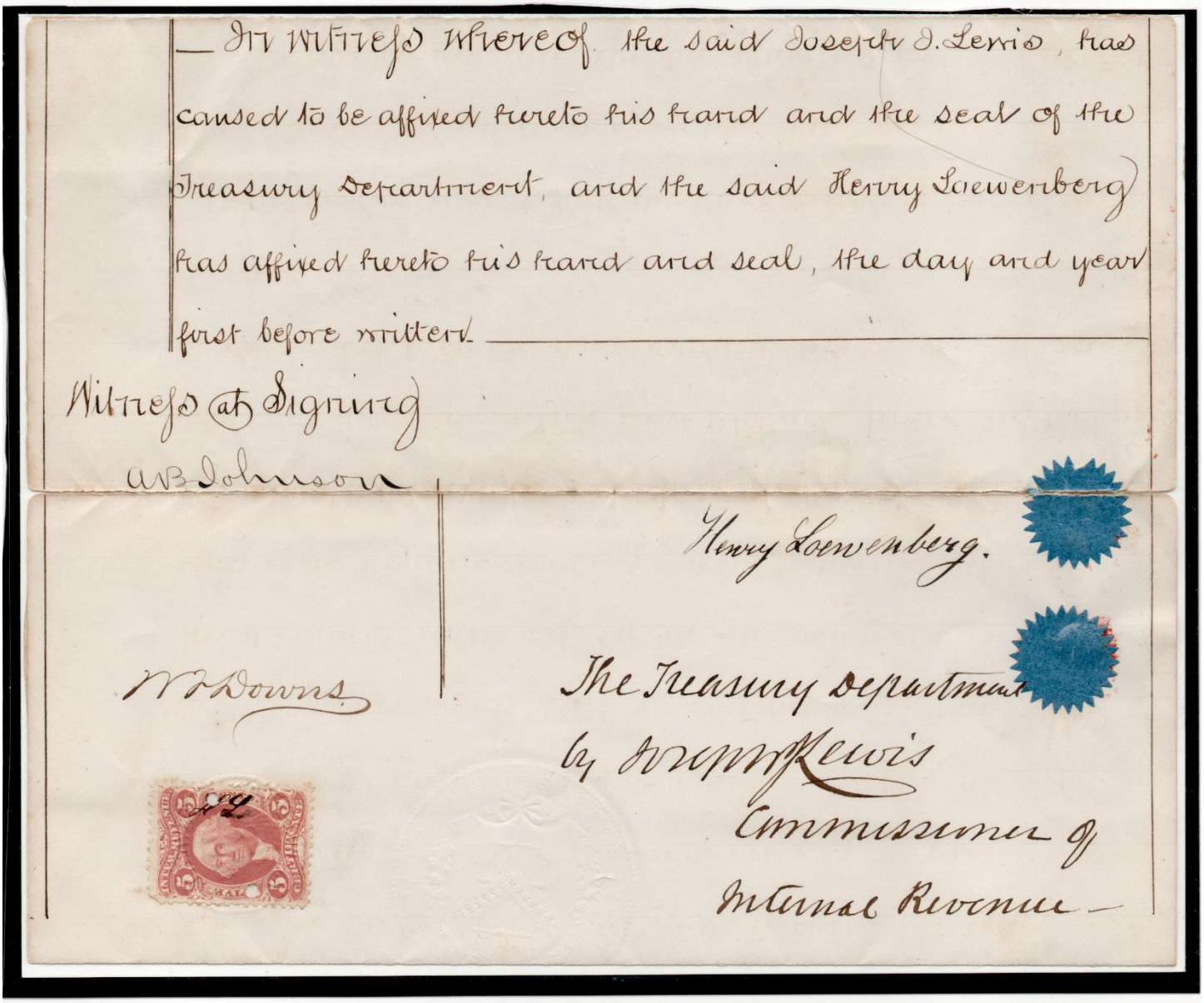
The first page of the contract: folded over

This Agreement, Made this twenty-eighth Day of March Anno Domini, One thousand eight hundred and sixty four. Between, The Treasury Department of the United States by Joseph J. Lewis Commissioner of Internal Revenue in said Department of the one part, and Henry Lowenburg of the City of New York of the other part. Witnesseth That the said Henry Lowenburg hereby agrees to furnish the said Commissioner of Internal Revenue, within four months from the date of this Agreement, one million bank check internal revenue stamps of such device as shall be approved by said Commissioner, to be printed in five different colours [two hundred thousand stamps

1864: Original copy of the contract

Second page

The page is too big to be exhibited without folding



In Witness Whereof the said Joseph J. Lewis has caused to be affixed hereto his hand and the seal of the Treasury Department, and the said Henry Loewenberg has affixed hereto his hand and seal, the day and year first before written.

Witness at Signing
A B Johnson

Henry Loewenberg.

W W Downs

The Treasury Department
by Joseph J. Lewis
Commissioner of
Internal Revenue.

1864 Bank Check stamps: printed by Butler & Carpenter

'The... advantages both for the government and the public, which these stamps will possess if their use is found to be feasible, are too meaningful to be required to dwell upon.'

From a Treasury Dept. letter to **Butler & Carpenter, March 9 1864**

2c Bank Check dies

Two recorded

Hybrid die: B&C decal signed by DH Craig of the NBNC

One recorded

2c Bank Check plate proofs: imperf and perf 12, gummed, shown from the front

Orange Brown

Light Blue

Purple

Brown

Dark Blue

Orange

Dark Red

Pink

Orange Brown

Green

1864 Bank Check stamps: multiples

2c Bank Check plate proofs – blocks of 9 shown from the front
Perf 12 and printed in reverse on the gummed side on transparent paper

Bright Blue

Purple

Dark Red

Dark Green

Insurance tax stamps: printed by Butler & Carpenter, date unknown

25c Insurance Tax plate proofs

Printed in reverse on the gummed side on transparent paper

Imperf

Brown red

Orange

Dark blue

Perf 12

Dark blue

Brown red

Green

Yellow orange

Orange

Note: these essays were unknown until they were discovered by Jim Lee in the personal effects of Falk Finkelberg when he died. There is no contract and no official record of them.

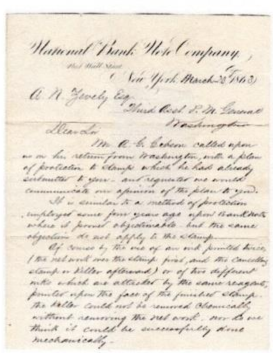
MacDonough of the NBNC writes to Zevely about self-cancelling stamps

March 23, 1863: this **unique** 'decal', stuck to the back of MacDonough's letter to Zevely, is **the most important** essay in the Loewenberg catalogue

A Coat of Arms, printed on the gummed side and stuck to the letter.
The corner has been folded back to prove the decal effect.

Page one

Describes **Gibson's** 'safety paper' patent



National Bank Note Company,
New York March 23 1863
A. N. Zevely Esq
Third Asst. P. M. General
Washington

Dear Sir

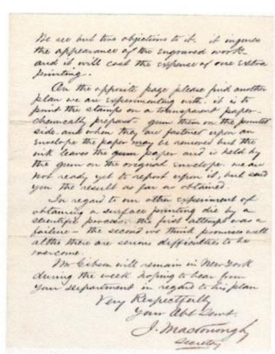
Mr A. C. Gibson called upon us on his return from Washington, with a plan of protection to stamps which he had already submitted to you — and requested we would communicate our opinion of the plan to you.

It is similar to a method of protection employed some few years ago upon Bank Notes where it proved objectionable but the same objection do not apply to the stamp.

Of course by the use of an ink printed twice, (the net work over the stamp first, and the cancelling stamp or letter afterward) or of two different inks which are attacked by the same reagent, printed upon the face of the finished stamp. The letter could not be removed chemically without removing the net work, nor do we think it could be successfully done mechanically.

Page two

Describes **Loewenberg's** idea for a decal stamp



We see but two objections to it. It injures the appearance of the engraved work and it will cost the expense of one extra printing.

On the opposite page please find another plan we are experimenting with. It is to print the stamps on a transparent paper chemically prepared — gum them on the printed side and when they are fastened upon an envelope the paper may be removed but the ink leaves the gum paper and is held by the gum on the original envelope. We are not ready yet to report upon it, but send you the result so far as obtained.

In regard to our other experiment of obtaining a surface printing die by a scientific process. The first attempt was a failure — the second we think promises well altho there are serious difficulties to be overcome.

Mr Gibson will remain in New York during the week hoping to hear from your department in regard to his plan

Very Respectfully
Your Obt Servt.
J. MacDonough
Secretary

The Loewenberg page of MacDonough's agenda-setting letter to Zevely about patents

'... please find another plan... to print the stamps on transparent paper...'

We see but two objections to it. it injures the appearance of the engraved work - and it will cost the expense of one extra printing.

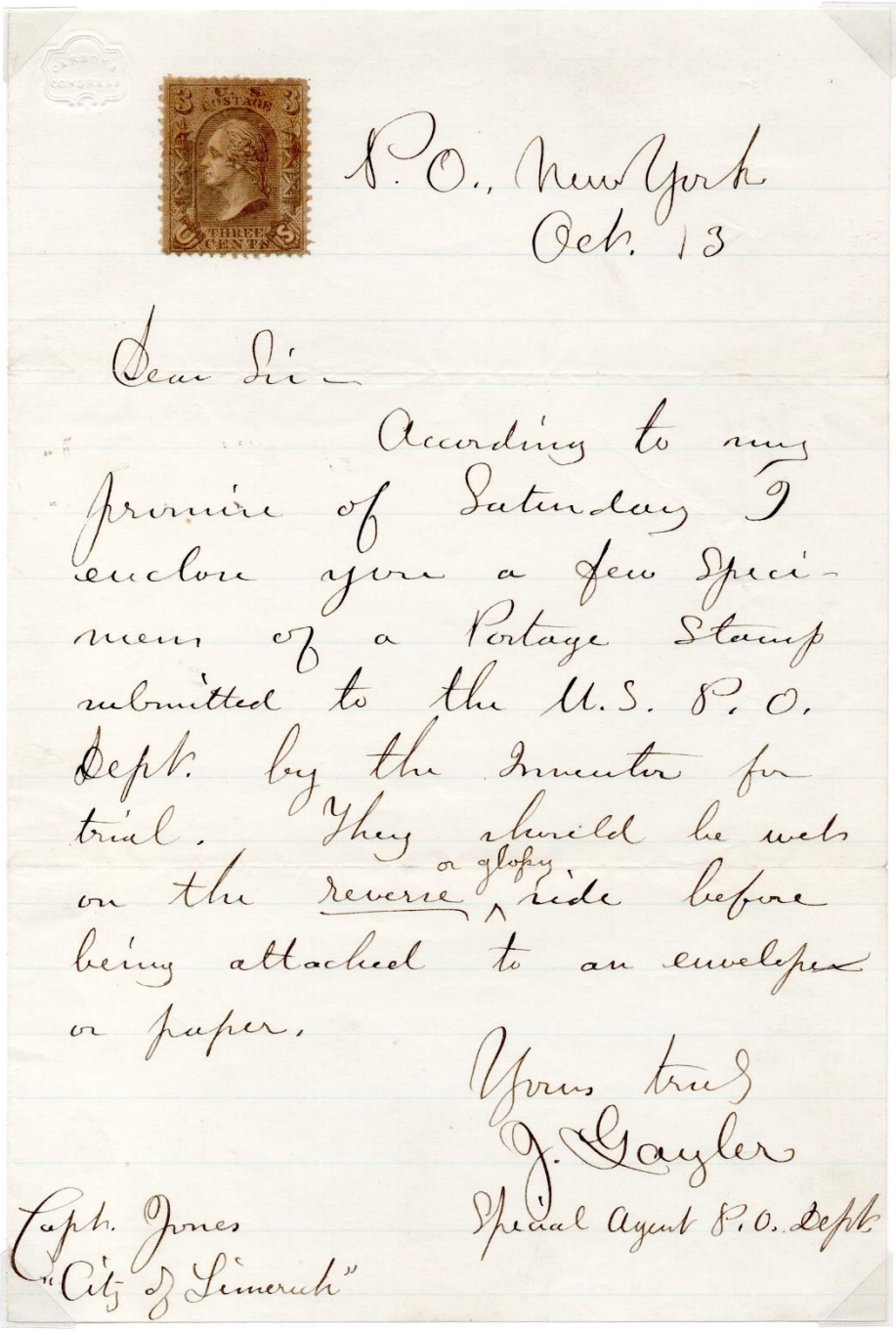
On the opposite page please find another plan we are experimenting with - it is to print the stamps on a transparent paper - chemically prepared - gum them on the printed side - and when they are fastened upon an envelope the paper may be removed but the ink leaves the ~~gum~~ paper and is held by the gum on the original envelope - we are not ready yet to report upon it, but send you the result as far as obtained.

In regard to our other experiment of obtaining a surface printing die by a scientific process - the first attempt was a failure - the second we think promises well altho there are serious difficulties to be overcome.

Mr Gibson will remain in New York during the week. Hoping to hear from your department in regard to his plan

Very Respectfully
Your Obt Servt.
J. MacDonough
Secretary

Special agent Gayton of the USPO writes to Capt. Jones about Loewenberg stamps



P. O., New York
Oct. 13

Dear Sir—

According to my promise of Saturday I enclose you a few Specimens of a Postage Stamp submitted to the U.S. P. O. Dept. by the Inventor for trial. They should be wet on the reverse or glossy side before being attached to an envelope or paper.

Yours truly
J. Gayler
Special Agent P. O. Dept.

Capt. Jones
"City of Limerick"

The stamp: Perf 12, gummed. Gray Black on transparent paper, per 12, gummed

'... I enclose.. a few specimens of a Postage Stamp submitted to the U.S.P.O. by the inventor...

'They should be wet on the reverse or glossy side before being attached to an envelope...'

1865/6 Loewenberg tried to sell his decal patent in France

French essays: 1853 1c on various papers and se-tenant with the US 'rod & axe' essay
Imperf, ungummed

Five recorded
se-tenant

e: Calvet

Se-tenant stamps of France and the United States

Prussia is the only country known to have used the patent

Printed normally
Red on orange wove

Note the trial cancellations and security holes punched into the samples

Printed in reverse
Black on white wove

Printed in reverse
Black on blue green

1866: Loewenberg succeeded in Prussia: typographically printed

Stamps produced to pay the rates for parcel post in Prussia: roulette 10

10 Sg rose

30 Sg blue

Vertical pair of 10c struck by 1866 Schkenditz cancel.

Werben receiving postmark at left.

Prom Eibenstock to Paris, 2 March 1968.

50 sg part pays the 500 franc rate

Loewenberg 'decals': a discovery; and rare or unusual items

Proof that Loewenberg took his patent to American Bank Note Company

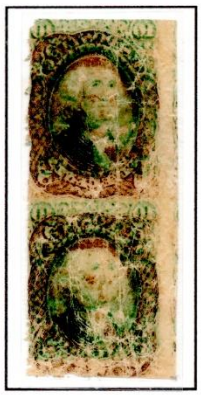
Research: on 27 November 1863, the POD's Zevely wrote to NBNC's Macdonough to complain about slow progress with decals, saying that Continental had produced "specimens (that) seem very good."

Decals by Continental Bank Note Company have never been found. My discovery of **an ABNC decal** suggests that Loewenberg actually took his patent to ABNC.

1864 ABNC
proof on card

Discovery copy
One recorded

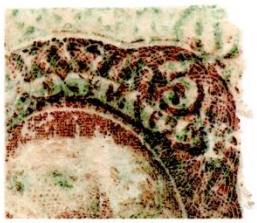
Printing on both sides: 1861 5c and 10c



Two recorded

5c** on **10c
Double printing

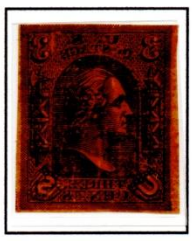
Shows **10c** from the front



Shows **5c** from the front

Orange laid paper: imperf, gummed, shown from the gummed side

Black on orange laid



Grey on orange laid

Key dates

1864 (5 January): *Gibson's geometric overprints*
1864 (9 February): *Harmon's grid overprint*
1869 (5 October): *Thorpe's double-printing*

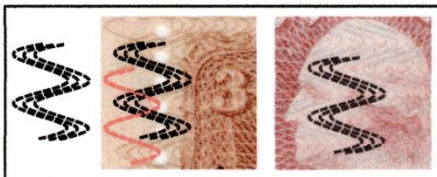
1861 1862 1863 **1864** 1865 1866 1867 1868 **1869** 1870 1871 1872 1873 1874 1875 1876 1877

MacDonough's 1863 letter (see Exhibit p. 27) was mainly about Gibson's idea for a stamp that had been overprinted with a 'network' pattern in fugitive ink. They are generally called **safety paper essays**, but I think they are better described as **double Printing** experiments. NBNC performed many such experiments after its early tests of48 Gibson's idea.

1864 Gibson patent 41,118 – double printing of a geometric pattern over the stamp design

Research: I prove that **there are only three types of overprint** (not four as as used to be thought). **I describe them according to their wave-like characteristics.**

Type 1: wavelength 3.2 mm; amplitude 3.2 mm



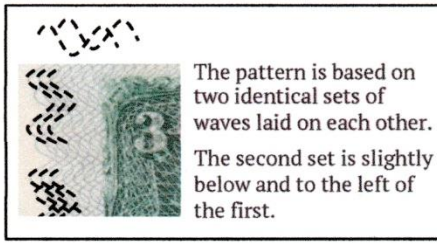
Each wave is as high as it is wide. The left margin has an additional wave.

Yellow brown
Overprint tan

Rose-red
Overprint blue

Green
Overprint gray-tan

Type 2: wavelength 3.2 mm; amplitude 1.6 mm



The pattern is based on two identical sets of waves laid on each other.

The second set is slightly below and to the left of the first.

Dark green
Overprint blue-green

Blue
Overprint gray-tan

Rose-red
Overprint gray-blue

Patent description:

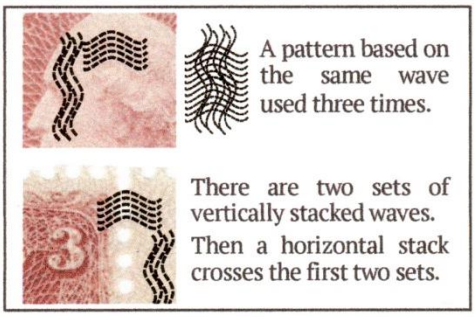
Patent 41,118 was for a lithographic overprint in fugitive ink that would wash off if a person tried to clean the cancel off a stamp. To quote: '*The impression of the stamp may be produced partly by indelible ink and partly by a fugitive ink... forming* ***a light network****, which will not obliterate...*' the stamp.

From Gibson's letters patent dated ***January 5, 1864***

* Hofmeyr, Jan; Richard Drews and James Lee (2017), *'Types of Safety Network Overprint Found on 3c 1861 Essays'*, Chronicle 69: 1, February

1864 Gibson patent 41,118 – double printing of a geometric pattern over the stamp design

Type 3: wavelength 3.2 mm; amplitude 0.8 mm



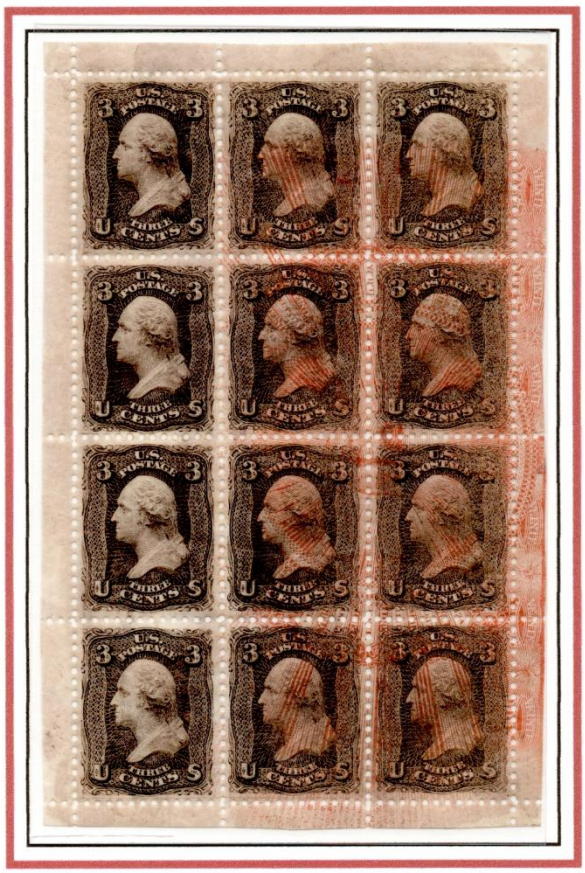
Light red brown
Overprint pale brown

Rose red
Overprint gray-blue

Light yellow brown
Overprint pale brown

Proof that they were they were printed **in mini-sheets of 12** and that **the design was fugitive**

One recorded: proves sheets of 12
Black on stamp paper, *gummed*



Scan of the overprint: 'VEINTE starburst'

Proof that the design is fugitive

Only block of 4

Type 2
Mauve on stamp paper, *gummed.*
Overprinted in gray

* Hofmeyr, Jan; Richard Drews and James Lee (2017), *'Types of Safety Network Overprint Found on 3c 1861 Essays'*, Chronicle 69: 1, February

1864 Gibson patent 41,118 – additional examples

Hypothesis: although there are many color combinations, it is easy to create matched pairs. This suggests that **there is only one sheet in each color combination** (only 12 stamps).

Type 1 (big wave): wavelength 3.2 mm; amplitude 3.2 mm

Matched pair

Perf 12, gummed

Green Overprint gray-tan

Matched pair

Imperf, ungummed

Yellow brown Overprint tan

Type 2 (medium wave): wavelength 3.2 mm; amplitude 1.6 mm

All imperf and ungummed

Match on previous pages

Blue Overprint gray-tan

No matches

Violet Overprint dull blue

Light brown Overprint light brown

Type 3 (mesh): wavelength 3.2 mm; amplitude 0.8 mm

Matched pair

Imperf, ungummed

Perf 12, gummed

Rose red Yellowish tan overprint

Reconstructed block of four

Violet Overprint olive gray

Match stamps on previous pages

Perf 12, gummed

Light red brown Overprint light brown

Rose red Overprint gray blue

1864 Harmon patent 41,505 – geometric overprint using cancelling ink

Research: the origin of these so-called **'bedspring essays'** has long been a mystery. On this page **I present evidence that they are based on Harmon's patent of 1864.**

Stamps: overprinted in different color inks, perf 12

Three recorded

Black *overprint*

Red *overprint*

Red *overprint*

Blue *overprint*

Black *overprint*

Fig. 3.

A scan from the patent illustrates Harmon's idea

Buffalo patent cancel: 1863-65
No gum as if used

Did these essays go through the post?

Patent description:

'Upon the face of the stamp... I impress rectangular or waved web lines so that the entire area of the stamp shall exhibit fine meshes...' Harmon argued that the only way to prevent people from finding a solvent that could remove cancellations, was to print the network in the ink that was used for cancels.

From Harmon's letters patent dated ***February 9, 1864***

Essays of unknown origin: generally accepted as genuine: this is the only set known

Gummed, overprinted in red and black.

Gummed, faint black overprint

Gummed, blue overprint

Gummed, outline in red, filling in mauve

Hand drawn overprints. I place these here because of their use of the same colours as the 'bedspring' overprints.

1869: Thorpe's patent 95,634 – geometric patterns printed under the design

On stamp paper: Essays using complex geometric underprints and the Liberty Head design. Imperf and ungummed. Thorpe's patent called for one ink to be fugitive to acidic solvents; and the other, to **alkaline solvents**.

Black 'ONE' repeated

Black 2 in ovals

Red horizontal diamonds

Black 5 in hexagons

Red 3 in diamonds

Red 2 in circular stars

Patent description:

Patent 95,624 involved what Thorpe called 'double-printing': *'The nature of my invention consists in the printing of... stamps with two kinds of ink... so different in their chemical composition that a solution of acid will destroy the one, while the other will be... destroyed by... a solution of alkali...'*

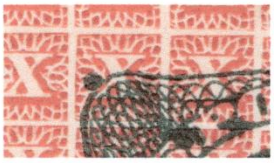
From Thorpe's letters patent dated ***October 5, 1869***

1869: Was Thorpe's patent combined with MacDonough's patent 30,488?

Note: in 1860, MacDonough of NBNC patented a process for combining **patterns** with **words and numbers** in a single engraving. Thorpe's essays appear to use the Macdonough patent for some of the underprints.

Late 1860's: Thorpe essay with a complex underprint and the Liberty Head design
Pattern derived from 1860's South Carolina bank note

Red X in squares



Scans from the Liberty Head SPEs

Scan from the South Caroline bank note

1860: $10 bank note of the State of South Carolina

Peter Schwartz points out that many of the SPE's used engraving devices derived from bank note technology; and that the original patent for much of this technology was due to James MacDonough of the NBNC.*

* Schwartz, Peter (2021), Inventions of Prevention, Self-published, Los Angeles

1869: Thorpe's patent – examples of the use of a ground color and precise double printing

Double printed essays using a deep orange ground color

Deep orange ground color

Imperf ungummed

Perf 12 gummed

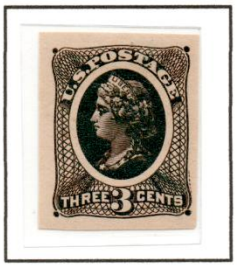
Precise double printing

Research: in 2015 Jim Lee and I established that **these essays fulfill the criteria for Thorpe's patent***

The stamps below illustrate a third possible way in which Thorpe's '**double printing**' could be achieved. In this case, two copies of the design have been printed – one directly on top of the other.

e: PF

Black on **Scarlet**



Imperf gummed

Perf 12 gummed

Scans shows the color differences and the effects of double printing

These **Brown** on **Scarlet** examples are **Discovery Copies**

Imperf gummed

Perf 12 gummed

* Hofmeyr and Lee (2016), The Chronicle 68:2, May

1869: Thorpe's patent – they were produced in sheets of eight

Research: because these stamps are **double printed on a *Yellow* or *Green* ground color**, they conform to the **Thorpe patent**

Sheets: imperf on stamp paper

Yellow ground,
Ungummed.

143 x 82 mm

The two items are a perfect fit.

One recorded

Uncatalogued

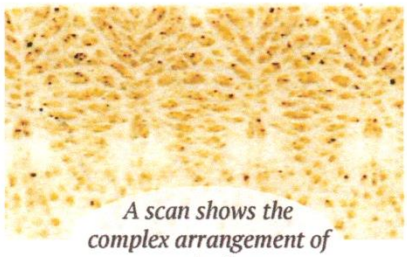
Green ground,
Ungummed.

135 x 78 mm

Double printing rarities using the 1861 1c and 3c stamps – no known patent

On thin crisp paper: frame of the 1861 1c overprinted with a complex lathe-work pattern

One known



A scan shows the complex arrangement of organic shapes

Design: black
Overprint: dull olive green

On India paper: 1861 3c in carmine overprinted ONE in olive brown

Originally **a unique sheet**, then split but now back **on the same page.**

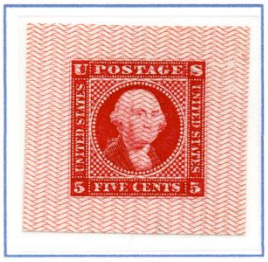
Imperf, ungummed

Double printing rarities using three essayed designs for the 1869 issue

Stamp paper, imperf and ungummed

There are **124 of these essays**. Each one is a **unique combination** of design, pattern, and color. On this page I show examples of the **three designs** and each of the **four broad types of pattern**.

Simple curves or loops



Carmine; Scarlet

Orange Brown; Orange
Horizontal waves

Orange Brown; Orange
Vertical waves

Blue-green; Scarlet

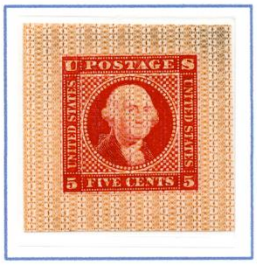
Complex waves

Dark Blue; Scarlet

Orange; Black

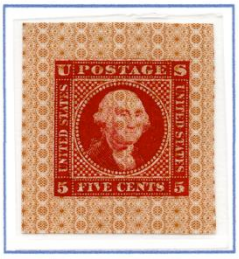
Blue-green; Scarlet

Lathe-work and bank note designs

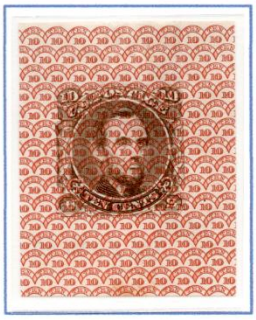


Carmine;
Orange Red

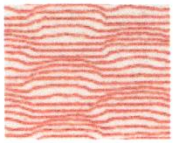
Carmine;
Orange Brown



Brown; Scarlet



Simple curves



Complex waves

Lathe-work

Currency pattern

Key dates

1864 (5 April): *Loewenberg's starch-coated paper*

1866: Loewenberg's chemically treated paper (6 March); Wyckoff's "China white" (3 April)

1861 1862 1863 **1864** **1865** **1866** 1867 1868 1869 1870 1871 1872 1873 1874 1875 **1876** 1877

1865 (7 June): *Francis's "oxalic" paper*

1876 (May): *Final tests of Francis's patent*

4: Coated and chemically altered papers

Loewenberg's patents 42,027 (starch-coated) and 53,081 (oxalic acid)

1861 3c Rose
Perf 12, gummed

1861 1c Blue
Imperf, ungummed

Lithographic 3c Black
Imperf, ungummed

Lithographic 3c Blue
Imperf, ungummed

Wyckoff's 's 'China white' patent 53,723

1861 1c Green
Imperf, ungummed

Lithographic 3c Orange
Imperf, ungummed

Francis's patent 42,027

1861 2c Black
Imperf, ungummed

Loewenberg's idea for printing on a starch-coated paper, was the first for starch-coated or chemically treated papers. The USPO returned regularly to these ideas. In the chapter you will see:

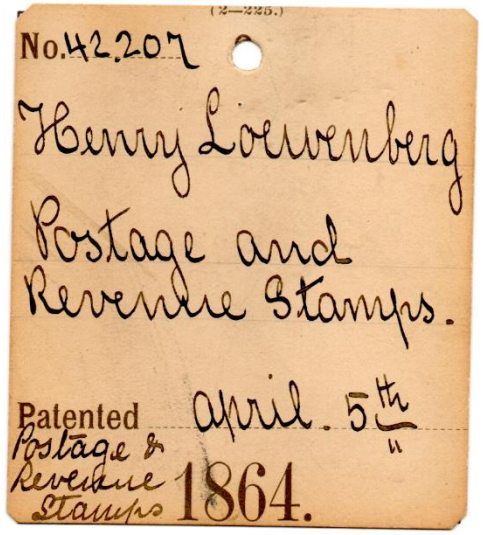
- Coated papers by **Loewenberg** and **Wyckoff**:
  - Loewenberg's patent for starch-coated paper
  - Wyckoff's patent for paper coated with oxide of zinc (China white)
- The **Discovery copy** that proves that **Wyckoff's patent** was tried on plates of the **1861 3c stamp**
- **Research** that proves that the **Loewenberg** and **Wyckoff** patents were tried on **surface printed essays**
- Patents for chemically altered paper by **Francis**, **Loewenberg**, and **Schnoble**

1864 Loewenberg patent 42,207 – printing on starch-coated paper

Early efforts using a plate of the 1861 3c stamp

Research: for decades these essays were incorrectly described as 'decals'. In 2016 I proved that they were **tests of Loewenberg's patent 42,207** for **starch-coated paper.***

Rose. Imprint block of four.



The original patent-label tag

Research: to establish that these are not 'decals'

Actual stamp with flakes removed

Before and after scans of the flakes of starch being removed

The actual flakes

Magnified scans of the removed flakes

Procedure: The surface is severely cracked. Using tweezers it is relatively easy to lift printed flakes from the surface. Even when old gum is severely cracked, it cannot be lifted so easily.

Patent description:

Patent 42,207 involved coating the paper so as to *'... prevent the penetration of the ink;'* and then printing on the coated surface. The gum is applied to the back in the normal way. *'Any attempt to wash off the canceling mark would result in the removal or defacement of the print itself.'* Loewenberg suggested a coating of starch.

From Loewenberg's letters patent dated ***April 5, 1864***

* Hofmeyr, Jan and James Lee (2016), *'Linking 3c Washington Essays to their Patents'*, Chronicle 68: 3, August

1864 Loewenberg patent 42,207 – printing on starch-coated paper

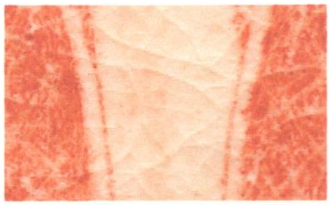
A re-test of the 1864 patent on surface-printed essays in about 1866/7

Essays using the 1861 1c design: imperf, ungummed

Brown

Black

Red Orange



A high resolution scan shows how the **starch has cracked** over time

Orange

Essays using the 1861 1c design: imperf, ungummed

Blue

Gray-brown

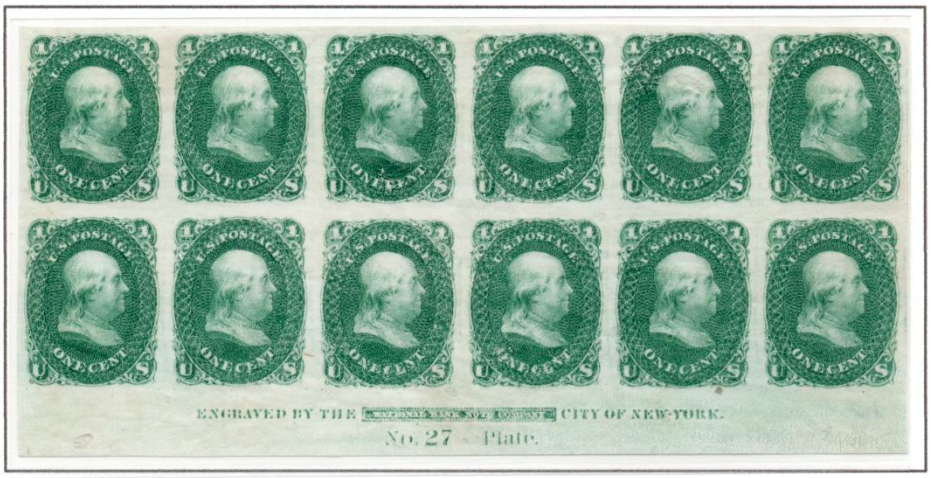
Pink

1864 Loewenberg patent 42,207 – printing on starch-coated paper

A re-test of the 1864 patent on surface-printed essays in about 1866/7

1861 1c plate 27: imperf, ungummed

Green



Essays using the 1861 1c design: perf 12, gummed

Red-orange

Brown

Note: these essays were the subject of an article by Jim Lee in an article published an article in Chronicle in 2006

* Lee, James E. (2006), *'Trial color plate proofs of the 1c 1861 issue'*, Chronicle 58: 1, February

1864 Loewenberg patent 42,207 – printing on starch-coated paper

A re-test of the 1864 patent on surface-printed essays in about 1866/7

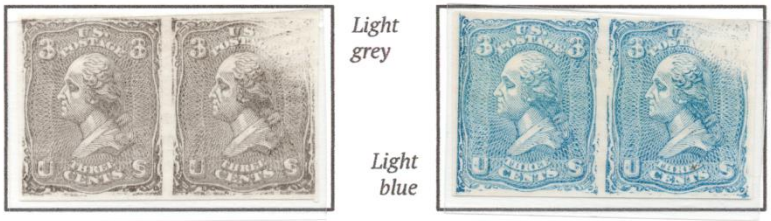
Research: for decades the following essays were described as **'Gibson starch coated'**. Tests show however, that they are essays based on **Loewenberg's starch coated paper**.*

1861 3c: Tests of Loewenberg's starch-coated paper on a lithographic version of the stamp

Background: Mason (1911) described these essays as '*ordinary white paper*'. Brazer added *'Gibson patent coated opaque white paper...'* (1941). Until 2021 the Scott catalogue followed Brazer.

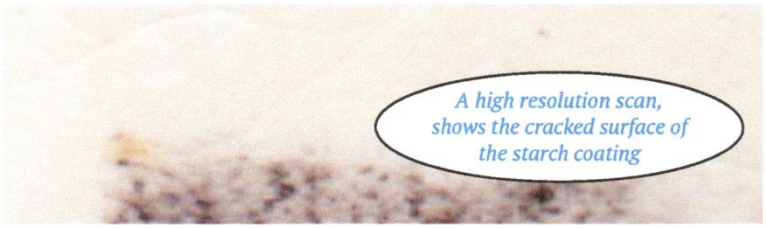
Gibson never patented a coated paper. Loewenberg and Wyckoff did.

i). Essays wiped by cotton wool dipped in warm water



Note how the printed ink comes away cleanly, without smudging. This happens as the damp cotton wool dissolves the starch.

ii). Magnified high resolution scan of the surface



Starch coating causes the paper to crinkle

Procedure:

i. Wipe the printed surface with damp cotton wool. Fugitive ink would smudge. This ink resists the wiping until it comes away cleanly. This is how printing on a coated surface behaves when wiped.

ii. Examine the printed surface under strong magnification. As the high resolution scan shows, the surface is cracked. This is the defining characteristic of a starch coated paper – the starch coating cracks over time.

Conclusion: this is not a fugitive ink. It is a normal ink printed on a coated paper. The only patents for printing on a coated paper are **Loewenberg's 42,207** and **Wyckoff's 53,723**. Wyckoff's process does not lead to surface cracks. These essays are therefore tests of Loewenberg's patent.

* Hofmeyr, Jan and James Lee (2016), *'Linking Essays of the Washington 3c (1861-69) to their Patents'*, Chronicle 68: 2, May

1864 Loewenberg patent 42,207 – printing on starch-coated paper

A re-test of the 1864 patent on surface-printed essays in 1866/7

Shades: lithographic printing, imperf and ungummed

Pink

Blue

Yellow orange

Light pink

Brown

Light gray

Black

1865 Francis patent 48,398 – the paper stains black or blue when wet

Research: the story of the Francis patent

March 8 1865: letter from PM Kelley of New York to Zevely (POD)

"...although Dr Francis' plan undoubtedly has merit, yet it is not by any means equal to our present plan of cancelling at one blow (by the duplex canceller). *In my judgement its use in this office would be impracticable..."*

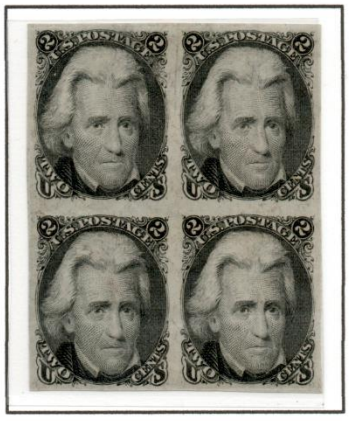
March 11 1865: letter from Macdonough (NBNC) to Zevely (POD)

"With Dr Francis we visited the New York Post Office and submitted the stamps in sheets and upon envelopes to Post Master Kelley... Enclosed please find 100 2c stamps cancelled"

This stamp shows how Francis intended the stamps to be cancelled – by dropping an acid or an alkali onto the stamp.

Two states of the 1861 2c: black

Imperf, ungummed



Not exposed to moisture

Perf 12, gummed

Exposed to moisture

Patent description:

Patent 48,398 was for a paper that had chemicals embedded in it so that it would change color when wet. To quote: '*... by wetting the stamp or paper the ferro-cyanide will combine with the sulphate of iron and produce a stain of a* ***deep blue color****... With the gallic or tannic solutions a pertannate of iron will be formed which is* ***black****."*

From Francis's letters patent dated ***June 7, 1865***

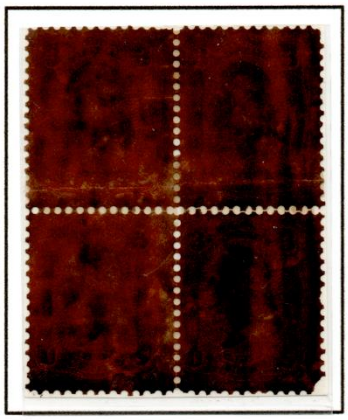
1865 Francis patent 48,398 – the paper stains black or blue when wet

Additional examples from the 1861, 1870, and 1875 issues

i). 1861 3c Rose: *Perf 12, ungummed*

Different levels of exposure to water

Slightly exposed



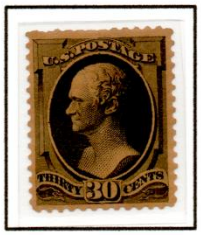
Heavily exposed

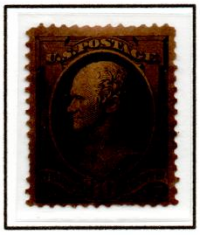
Medium exposed

ii). 1861 12c Black: *Perf 12, gummed*

iii). 1870 issue: perf 12

30c black





90c carmine

iv). 1875 5c Blue
Perf 12, ungummed

Condition
This is about as good as it gets. Heavily stained examples like this one have become so brittle over time that most have disappeared.

1866 The Wyckoff patent 53,723 – printing on paper coated with oxide of zinc

Essay using the 1861 3c design: on stamp paper, perf 12, gummed

Discovery

Two 1861 3c known

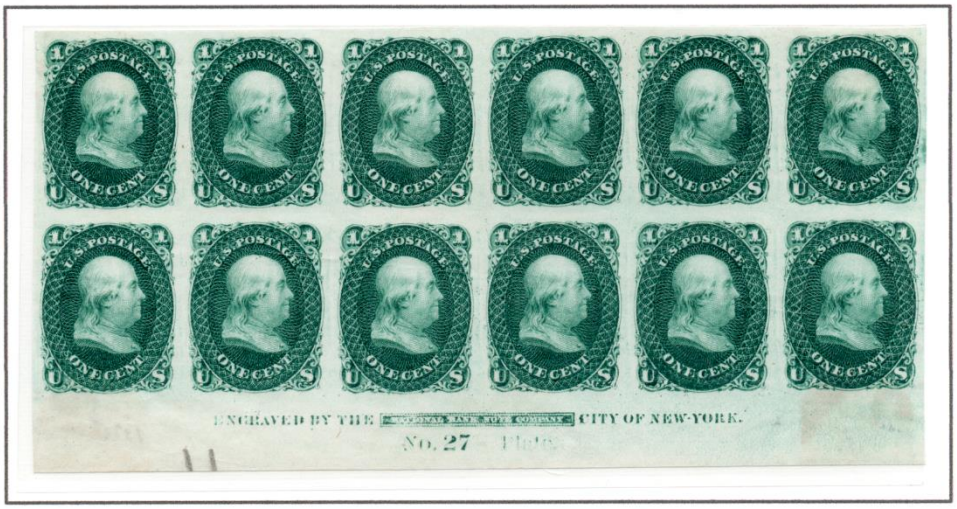
The Wyckoff patent was known on the 1c Franklin of 1861

This is the discovery piece proving its existence on the 3c Washington

Rose, perf 12, gummed

Essay using the 1861 1c design: on stamp paper, imperf, ungummed

Plate 27: *Green*



Patent description:

Patent 53,723 was for a coated paper that would not suffer from the defects found with Loewenberg's paper. To quote: '*... my invention consists in coating the side of the paper on which the printing is to be done with a surface of water-color pigment ...*'. He suggests oxide of zinc (commonly known as 'Chinese white').

From Wyckoff's letters patent dated ***April 3, 1866***

1866 The Wyckoff patent 53,723 – printing on paper coated with oxide of zinc

Additional shades of the 1861 1c on stamp paper: imperf, ungummed

Red-orange

Dark blue

Orange-brown

Brown: Imprint block

Blue

Black

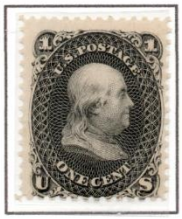
1866 The Wyckoff patent 53,723 – printing on paper coated with oxide of zinc

Additional shades of the 1861 1c on stamp paper: imperf

Plate 27: *Orange*

1861 1c on stamp paper: perf 12, gummed

Dark green



Black

Red-orange

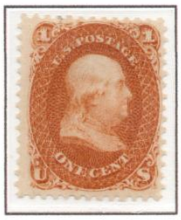


Plate 27: *pink*

Blue

1866 The Wyckoff patent 53,723 – printing on paper coated with oxide of zinc

A test of the patent on surface-printed essays in 1866/7: imperf, ungummed

Research: here I prove that N.B.N.C. also tested **Wyckoff's patent** with **lithographically printed stamps***


Dull pale blue


Dull yellow orange


Dull green


Dull orange red

Wiping with a damp cloth removes the ink without smudging

Procedure: wipe the bottom right corner of each stamp with a damp cloth. After a while, the ink comes away without smudging. These essays are therefore tests of coated paper, not fugitive ink. Magnification reveals that the printed surfaces are smooth, not cracked. The paper is therefore **not** starch coated.

Conclusion: there are only two patents for printing on a coated paper – Loewenberg's and Wyckoff's. Since these stamps don't show the characteristics of starch coated paper, they must be tests of Wyckoff's patent.

These essays combine surface printing to cut costs with Wyckoff's patent to prevent reuse.

"I wish it distinctly understood that I lay no claim to Mr Loewenberg's patent"

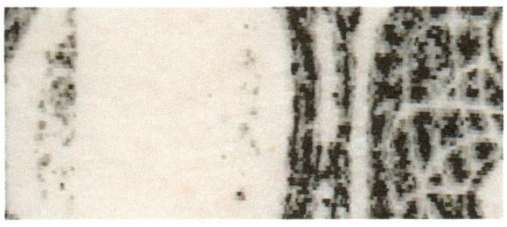
From Wyckoff's letters patent dated ***April 3, 1866***

Telling Loewenberg's and Wyckoff's patents apart

Wiping with a damp cloth produces the same result.

The scans show that the stamps can be told apart by looking at their surfaces.

The Loewenberg patent cracks over time, the Wyckoff patent doesn't.



* Hofmeyr, Jan and James Lee (2016), *'Linking Essays of the Washington 3c (1861-69) to their Patents'*, Chronicle 68: 2, May

1866 The Wyckoff patent 53,723 – printing on paper coated with oxide of zinc

1866/7 lithographic essays of the 1861 3c design: shades in multiples, imperf, ungummed

Dull orange red

Dull Pale Blue

Dull yellow orange

Discovery: Wyckoff perforated

Dull Green

Dull yellow orange

Blue One known

Wyckoff's critique of the Loewenberg 'decal' patent

Wyckoff's patent included a **detailed critique of Loewenberg's patent.** He notes, *'... it is very difficult to obtain a good impression upon a glazed surface, or indeed upon any glutinous surface.'*

'Stamps made thereby are impractical for ordinary use. The preparation of the material is exceedingly expensive.' The stamps *'... are too sticky or brittle...* ***the sheets stick together or break in pieces.***

1866 Loewenberg patent 53,081 – attempts to remove cancellations discolors the paper

Research: How the patent works

From Loewenberg's patent

"The nature of my invention consists in the preparation of the paper... with prussiate of potash, and with oxalic acid... such that when any chemical agents as would remove writing or printing ink... they will instantly discolor the paper"

The chemistry

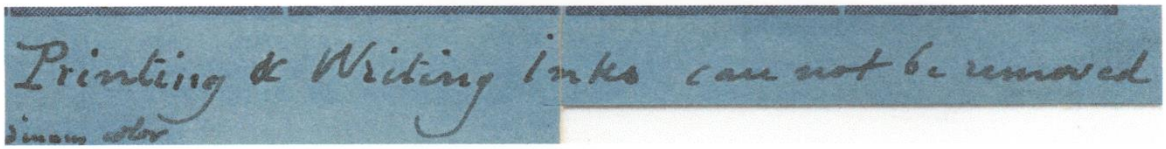
Loewenberg's idea involves the following steps:

i. Treat the paper with certain chemicals – the treated paper will be white.

ii. Print the stamps on the paper. The paper will stay white but the chemicals will interact with the ink.

iii. Any attempt to remove a cancellation with an acidic or alkaline substance, will discolor the paper.

Ex-Costalis: proving piece for the Loewenberg patent



Patent description:

Patent 53,081 was for any paper that may be used for stamps, bills, or bank notes to be chemically treated *'... so that when any attempt is made... to remove printing or writing, or both, the paper will permanently change its color, but the writing will be more affixed to the paper.'*

From Loewenberg's letters patent dated ***March 6, 1866***

1866 Loewenberg patent 53,081 – attempts to remove cancellations discolors the paper

6 March 1866: an annotated essay proves both the date and how Loewenberg's patent works

One recorded

Dated 6 March 1866

The bottom stamp shows the paper before the chemical intervention.

The top stamp proves the discoloration when exposed to a chemical cleaning agent

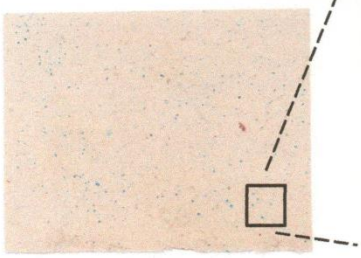
Rod & axe design

Brown-red on semi-transparent paper

Imperf, ungummed

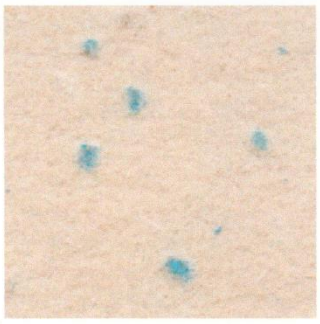
Examples that show what the stamps look like in mint or near mint condition

Rod & axe: 3c light brown
Imperf, ungummed



Scan of the back. Note the barely visible chemical flecks

Two examples showing Loewenberg's chemicals embedded in the paper.

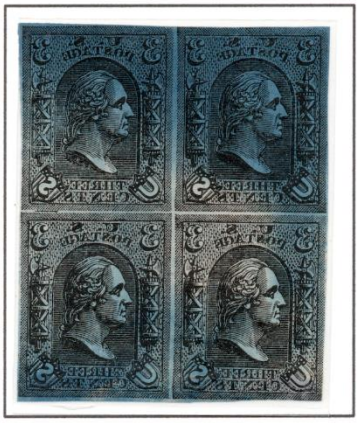


Scan of the back. Exposure to damp and air overtime has stained the paper.

Rod & axe: 3c dark brown
Imperf, ungummed

1866 Loewenberg patent 53,081 – when wet, the paper stains and the ink turns color-fast

Loewenberg's chemical paper: shades – discolored in varying degrees



Very dark gray
Partial chemical exposure

Can't tell the shade
Heavily chemical exposure

Brown

Red

Blue

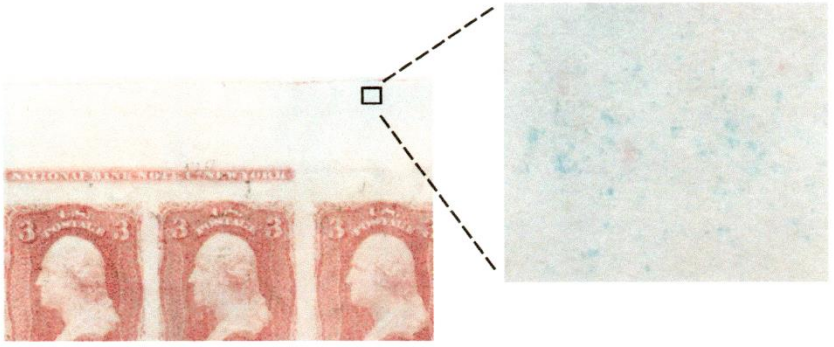
Scarlet
Imperf

Scarlet
Perf 12

1866 Loewenberg patent 53,081 – when wet, the paper stains and the ink turns color-fast

Loewenberg's chemical paper: a plate proof of the 1861 3c

Research: previously attributed to the Francis patent. But a **highly magnified scan** shows that the paper has the same characteristic as **the 'rod & axe' Loewenberg essays.**



1861 3c: rose, imperf, gummed

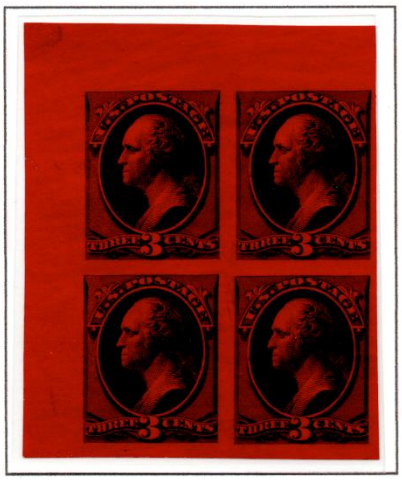
One **imprint block of 12** known

1876 Schnoble patent 171,871 – chemically treated and coated paper

Patent applied to the green **3c stamp** of the **1870 issue**

These stamps are on chemically treated **tissue paper** (a key characteristic of the Schnoble patent). However, as Peter Schwartz notes, **the attribution is quite tenuous**.*

*On **'varnished'** tissue paper.*



Imperf, ungummed

*On **treated** tissue paper*

The stamps show the pinkish hue attributed to the Schnoble patent

Perf 12, gummed

Patent description:

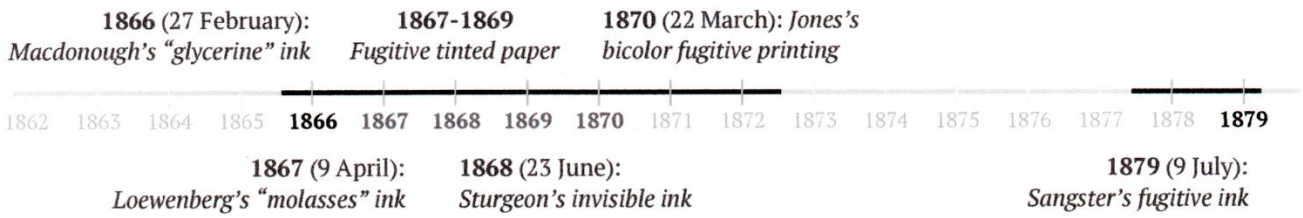
Patent 171,871 involves a two-stage process to prepare **tissue paper** for the printing of stamps. First, coat the paper with a **starch compound** consisting of glue, sugar, glycerine, and muriatic acid. Second, apply a second coat of **albumen** and **glycerine**.

According to Schnoble, the patent would be just as effective if based only on the second coating. He goes on: *'... when this stamp is stuck to any surface, and an attempt is made to soften the same and remove it, the design thereone separates from the paper, and the stamp is effectually destroyed.'*

*From Schnoble's letters patent dated **January 4, 1876***

* Schwartz, Peter (2021), Inventions of Prevention, Self-published, Los Angeles

Key dates



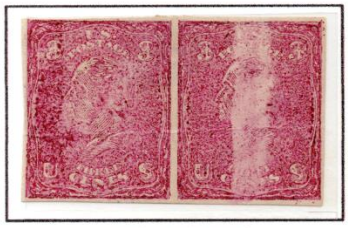
This chapter is about experiments with ink. The most common experimental inks are **fugitive**. But experiments in the United States also included an **invisible** ink (Sturgeon's patent in 1868).

1866 Macdonough patent 52,869 – a fugitive ink based on glycerine

Mason (1911) grouped these essays with what Brazer erroneously called the '*Gibson patent coated paper*' essays. My research shows that both are wrong. Gibson never patented starch-coated stamps.

Research: proves that these essays have been incorrectly described as **'Gibson starch coated'** since Brazer (1941). In fact, **they are examples of Macdonough's fugitive ink.***

The original proof of Macdonough's lithographically printed experiments



Dusky violet red

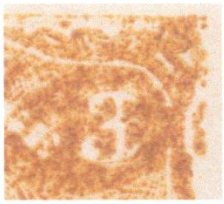
Dull dark yellow

The first stamp was wiped **'down-up-down'**. The second was **wiped clean**.

At first, **Macdonough's ink** smudges. With persistent rubbing, it comes clean.

Printing

Macdonough's ink runs after printing and glistens in the light because of the glycerine



Wyckoff's coated paper

How the patent works

From Macdonough's patent

*"I have experimented for a long period in the employment of **glycerin** in printing inks... the glycerin will dissolve with such facility as to render it **impossible to wash** the cancelling-ink without **removing the original** glycerin-ink.*

"The extreme ease with which devices so printed may be obscured or destroyed renders it desirable to... diminish the solubility of the ink... Gelatin, animal or fish glue may be employed for this purpose with success."

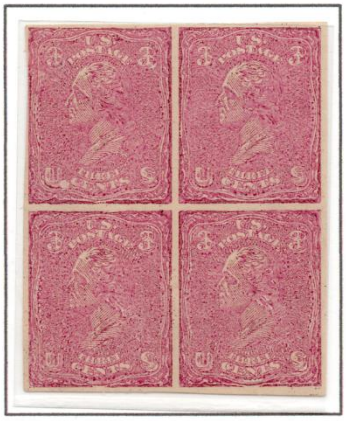
*From MacDonough's letters patent dated **February 27, 1866***

* Hofmeyr, Jan and James Lee (2016), *'Linking Essays of the Washington 3c (1861-69) to their Patents'*, Chronicle 68: 2, May

1866 Macdonough's patent 52,869 – a fugitive ink based on glycerine

Additional examples and shades: imperf and ungummed

Yellow



Dusky violet red

Brownish yellow

Orange red

Light orange red

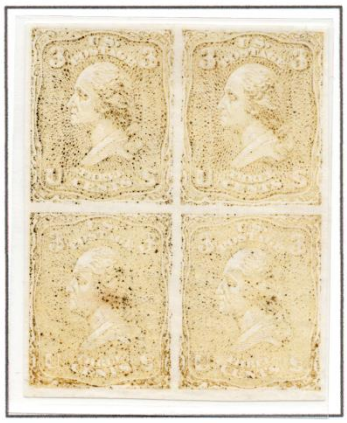
Light yellow orange

Yellow orange

Dark yellow orange

Dull olive yellow

Light yellow



Dark olive yellow

1866 Macdonough's patent 52,869 – a fugitive ink based on glycerine

Only known example of a **perfed stamp**

One known

Discovery

Perf 12, gummed
Dark yellow orange

A series shows how Macdonough improved the quality of the ink

Research: Macdonough's ink was initially rejected for being too fugitive. In this series I show how Macdonough improved the ink by adding gelatin.

Red orange | *Orange* | *Mauve* | *Gray-purple* | *Gray-purple*
Proof of Macdonough's ink

Correspondence from the Brazer Archive

28 September 1867: letter from **Zevely** (POD) to **Shepard** (NBNC President)

"I transmit herewith a copy of the report of the chemist... The color used in these stamps being so fugitive as to make them liable to injury... the Department deems it inexpedient to adopt them."

23 October 1867: letter from **Zevely** (POD) to **Charles Steel** (NBNC)

"I told Mr. Man that I thought the P.M.G. favorably disposed & that he should ***try the combination of McDonough's ideas*** *with yours."*

16 November 1867: letter from Man (NBNC) to Zevely (POD)

"The fugitive property is a matter of degree within out control, i.e: the stamps may be made more or less fugitive at will in the process of manufacture.

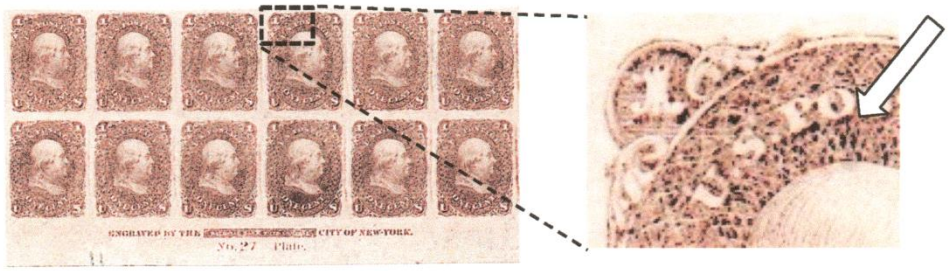
You will observe that those now submitted are not as fugitive as those heretofore tested under your direction."

1866 Macdonough's patent 52,869 – a fugitive ink based on glycerine

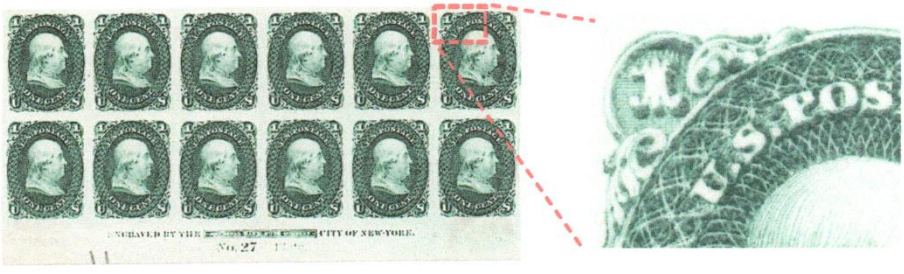
1861 1c Plate 27: An example of Macdonough's ink used for engraved printing

Brown on white wove paper

How to tell the difference between Macdonough's ink and Wyckoff's paper



Macdonough
plate block



Wyckoff
plate block

Macdonough's ink results in blotchy, uneven printing.
Wyckoff's patent is remarkable for how cleanly the stamps get printed.

1867 Typographic dies for a surface printed stamp – derived from the 1861 3c stamp

Research: In about 1867, under pressure from the POD, NBNC started producing surface-printed stamps which they then combined with their various patent experiments

Washington dies: Lightly embossed on soft white card

Die sunk on card: *Dull violet red*

Die sunk on card: *Dim orange red*

Die sunk on card *Dim light blue*

Die sunk on card *Dim orange red*

From correspondence:

22 October 1867: letter from Boyd (NYC stamp agent) to Zevely (POD)

*"I think a much better impression and a much handsomer stamp would be produced if the **surface-printing process** was substituted for the present plate printing.."*

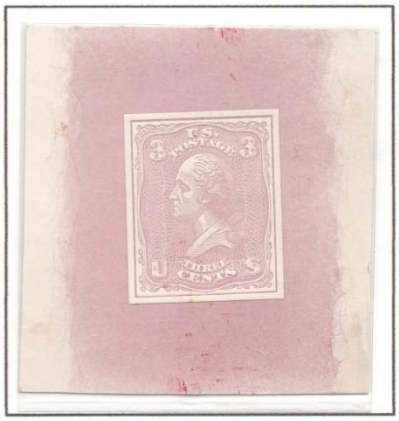
23 October 1867: letter from Zevely (POD) to Steel (NBNC)

"I told him (that is, Albon Man of NBNC) *that **surface-printing is wanted**, & he gave me to understand that it was **contemplated by McD*** (that is, Macdonough of NBNC)*."*

1867 Typographic dies for a surface printed stamp – derived from the 1861 3c stamp

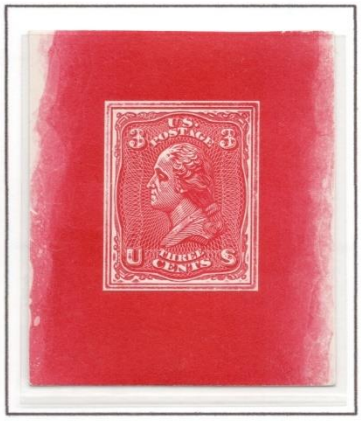
Complete design: Die essays derived from the 1861 3c plates

Full design: lightly embossed
Light red violet on stiff white card



Die lightly block sunk
Black on ivory paper

Full design: lightly embossed
Carmine on stiff white card



Heavily embossed on India, cut away and sunk on card

Blue

Brown

1867 Plate proofs for a typographic stamp – derived from the 1861 3c stamp

Shades: mostly imperf, some in fugitive ink. The orange shade is ungummed.

Perf 12

Light mauve

Pale blue-green

Dark gray-green

Gray-red

Orange

Blue

Dark Blue

Multiples

Pale blue-green

Blue

Orange: ungummed

1867 Plate proofs for a typographic stamp – derived from the 1861 3c stamp

Annotated margin blocks imperf, gummed – from a November 1867 shipment?

Sample 4 from the shipment mentioned in the correspondence below, was the only ungrilled, surface-printed sample. Hence, these most likely use **fugitive ink**.

Annotated: '5 – oil – surface – not embossed'. Bottom left corner margin: *blue*

Annotated: '5 – carmine – surface – not embossed'. Bottom left corner margin: *carmine*

Correspondence about a shipment of surface-printed stamps:

16 November 1867: letter from Albon Man (NBNC) to Zevely (POD)

"According to your request I have the pleasure to enclose to you specimens of stamps, as follows, viz:

No. 4-250 surface printed, fugitive- various colors- plain.
No. 5-340 surface printed, fugitive, - various colors – embossed before printed.
No. 6-565 surface printed, permanent- various colors- embossed before printed.

"The stamps may be made **more or less fugitive** at will... You will observe that those now submitted are **not as fugitive as** those heretofore tested under your direction."

* Hofmeyr, Jan (2019), *'The Neglected Details of Charles Steel's patent for Grilled Stamps'*, Chronicle 71: 2, May

1867 Lithographic dies for a surface printed stamp – derived from the 1861 3c stamp

Research: NBNC experimented with lithographic versions of the patents at about the same time as it was experimenting with typographic printing

Washington vignette dies

Black die on stiff thin card

Dots on face and neck

Black die on soft white card

Dots on face and neck, rough impression

Black die on stiff thin card

Face lined

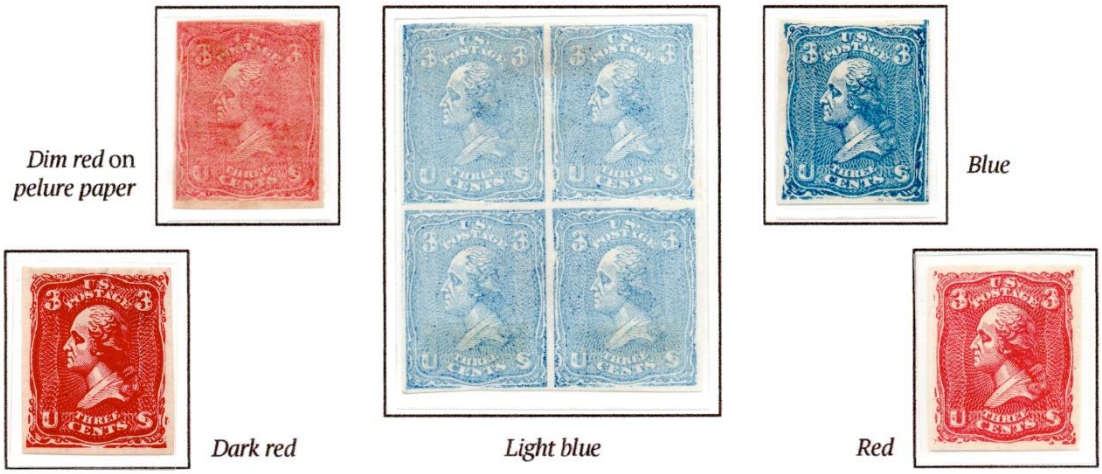
Magnified scans of the designs

Dots on face and neck

Thick lines for face

1867 Plate proofs for a surface printed stamp – derived from the 1861 3c stamp

Shades: imperf, ungummed on wove paper unless otherwise stated



Shades: perf 12, some in fugitive ink

1867 Plate proofs for surface printed stamps: tinted papers and fugitive inks

Derived from the 1861 3c stamp

Dim red on pale *straw:* *Gummed*

Perf 12

Orange on *straw:* *Gummed*

Perf 12

Red on *gray-green:* *Ungummed*

Perf 12

Green on *green*

Imperf, ungummed

Loewenberg patent 63,733: for an "*improved compound for printer's ink*"

Proof of fugitive ink

Imperf, ungummed

Green on white wove

Evidence of chemical tampering

Imperf, ungummed

Orange on white wove

Perf 12, gummed

Gray on white wove

Patent description:

Patent 63,733 was for a *'... compound for printer's ink which contains* ***syrup, molasses, honey,*** *or other saccharine material... By using* (these ingredients) *... an ink is obtained which is soluble and of superior brilliancy....*

From Loewenberg's letters patent dated ***April 9, 1867***

1867 Experiments with the 1861 3c stamp on tinted paper

The POD were also pressuring NBNC to experiment with tinted papers

From correspondence:

16 December 1867: letter from Zevely (POD) to Shepard (NBNC)

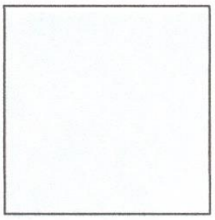
*"You are therefore requested to order the necessary changes in the manufacture of paper and it should be **very slightly tinted** in various colors to suit the colors of the stamps..."*

On wove paper tinted with sensitive ink

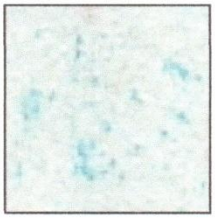
Plate block: gummed
Rose on blue-tinted paper

How to distinguish tinted blue paper from Loewenberg's chemical paper

Blue-tinted plate block



***Loewenberg** imprint block*



1867 Experiments with the 1861 3c stamp: imperf

On wove papers tinted with sensitive inks: ungummed unless otherwise stated

Brown red on white wove: gummed

Rose on *white wove*

Black on white wove
Experimental cancel

Lilac on *rose lilac*

Brown red on *yellow*

Brown on *yellow*

Lilac brown on *yellow*

Scarlet on *straw*

Orange on *green*

Pale rose on *white wove*

Carmine on *green*

Scarlet on *green*

Scarlet on *light blue*

Lilac brown on *pale pink*

Carmine on *blue green*

1867 Experiments with the 1861 3c stamp: imperf

On wove papers tinted with sensitive inks: ungummed unless otherwise stated

Plate 19: *blue*

Carmine
on *white*

Imprint block: gummed
Rose on blue-tinted paper

Green
on *yellow laid*

Green
on *green tinted*

Scarlet
on *yellow laid*

1867 Experiments with the 1861 3c stamp: perf 12, gummed

Green on *white*
Fugitive ink

Brown on *white*

e: PF

Brown on *white*
Water color ink

Scarlet on *dark blue*

Rose red on *light blue*

Scarlet on *pale green*

Red brown on *straw*

Black brown on *white*

ePF
Thick brown glue

Brown on *white*

Scarlet on *green*

Brown on *white*
Multiple: *thick brown glue*

ePF
Green on *white laid*

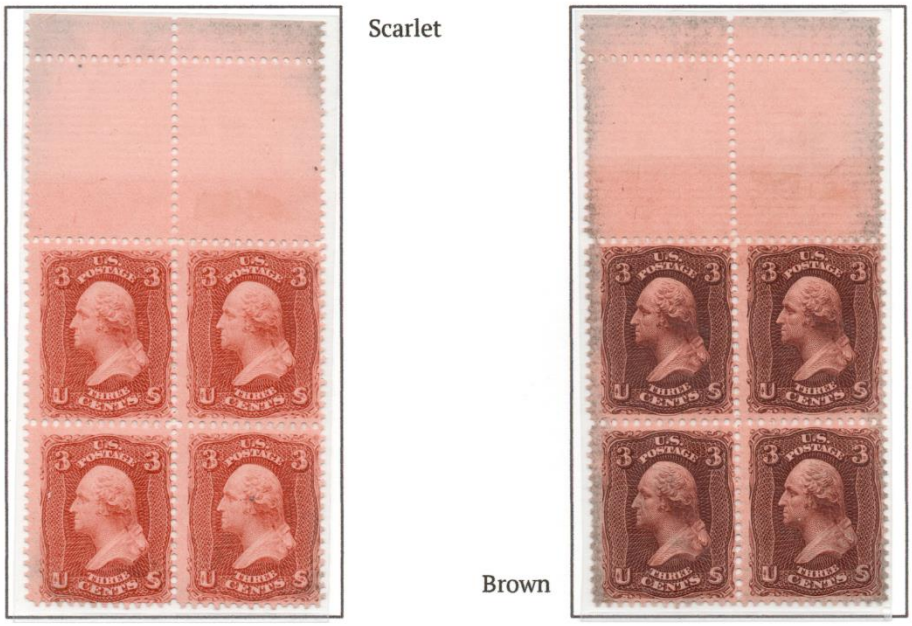
ePF
Brown red on *pale lilac*

Rose on *white wove*

Brown red on *rose lilac*

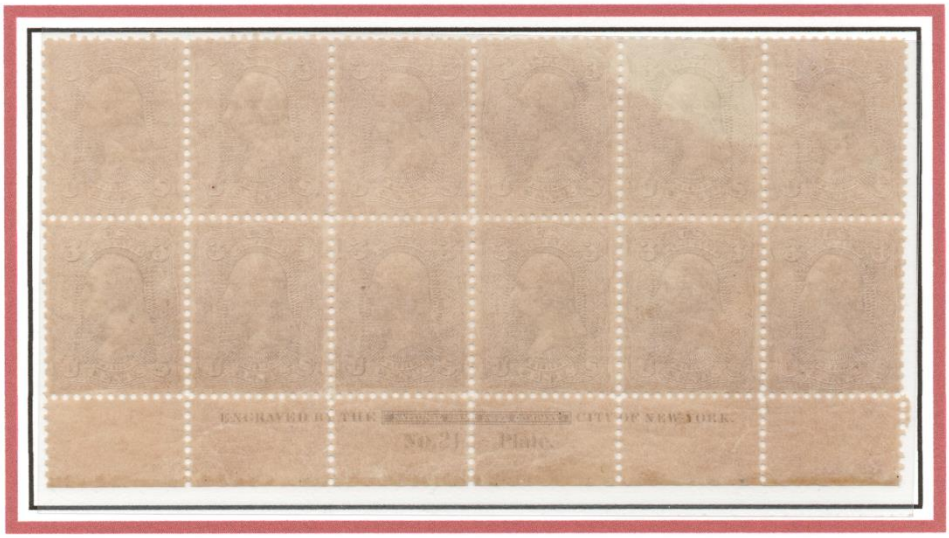
1867 Experiments with the 1861 3c stamp: perf 12, gummed

Salmon tinted laid paper



Imprint plate block: albino impression

Only known example of an albino imprint block



Not much is known about the above block. Early auction catalogues refer to it as 'a gum experiment'. But it looks simply like an under-inked plate.

1867 Experiments with the 1861 3c stamp: perf 12, gummed

Scarlet and **Brown**
On white wove paper

Scarlet on yellow tinted laid paper

Brown on yellow tinted laid paper

Scarlet and **Brown**
On green tinted laid paper

1867 Experiments with the 1861 3c stamp: perf 12, gummed

On wove papers tinted with sensitive inks

Pale scarlet on *pale blue green*

Rose on *straw*

Red red on *straw*

Rose red on *yellow*

Red brown on *yellow*

Tests and varieties

Brown and **Scarlet** on *salmon laid paper*

Evidence of chemical tampering

Green on *white*

Fugitive ink

Brown on white wove certified 'Double entry'

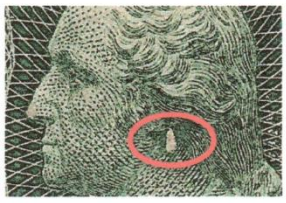
e PF

Scan of the 'Double entry'

Green on white wove 'Earing' variety

e: PF

Scan of the 'Earing' variety



1868 Sturgeon patent 79,157 – for printing the word 'cancelled' in invisible ink

"Cancelled" printed in **invisible ink** that turns **black** when wet

i). Die on white wove: rough impression, no lines in upper label

'Postage' written in light pencil in the upper label

Carmine
Not cancelled

Dark carmine
Cancelled

ii). Die on thick white tinted paper: rough impression, two lines in upper label

A magnified scan shows the 'LED' of the word 'canceled'

Green
Perf 12, ungummed

Uncatalogued

"Revenue" printed in **invisible ink** that turns **black** when wet

Dark green

Green

A magnified scan shows the 'RE' of the word 'revenue'

Patent description:

Patent 79,157 was for, to quote, *'... printing upon the back or face of the stamp, with perfectly colorless or invisible ink, the word "cancelled" or any other cancelling device, said ink having the property of becoming dark and visible whenever dampened..'*

From Sturgeon's letters patent dated ***June 23, 1868***

1869: Tinted paper experiments on essays not used for the 1869 pictorials

Research: by 1868 under the influence of Charles Steel, the USPO had become convinced that the new issue should be printed on **tinted paper** (see correspondence below).

24c plate essays on India: imperf, ungummed

Magnified scan
Signing the declaration of Independence

Untinted paper
Black

Yellow tinted paper
Black

Red-salmon tinted paper
Black

Why was there such an interest in tinted paper for the 1869 issue?

From archival documents

Steel's "grill" patent 22 October 1867

*"By the use of yellow paper, **prepared with fugitive colors**... I am able to produce my stamps in such condition that the application of... any of the chemicals employed to in the removal of cancelling ink, will be... indelibly recorded."*

14 January 1868: letter from (NYC stamp agent) to Zevely (POD)

*"... I think when we have the **thin tinted paper** in colors that will enhance their brilliancy we shall have a stamp which for its beauty and prevention against fraud cannot be equaled."*

Randall awards the contract to NBNC: 22 June 1868

*"It is a condition of this acceptance that stamps of new designs are to be furnished... and the use of **fugitive inks** and **colored papers**, if required for all denominations..."*

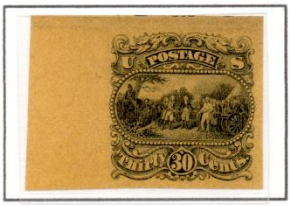
1869: The Burgoyne essay

30c plate essay on bond in dull violet: imperf, ungummed

Magnified scan of the central vignette

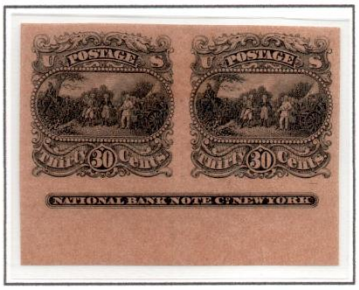
Overprinted *red bands*

30c plate essays in black on thin surface-tinted paper



On: *yellow*

On: *grey yellow*



Imprint pair on: *dull grey red*

On: *green*

On: *white*

On: *light pink*

On: *gray-blue*

On: *dark blue*

On: *brown violet*

Imprint block on: *salmon red*

Margin block: *light buff*

1870 Jones patent 101,020 – multi-color printing using at least two fugitive inks

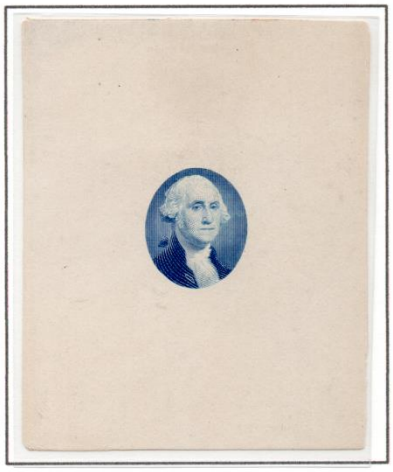
Essays created in 1868/9

Die on India
Black, ochre overprint

One known

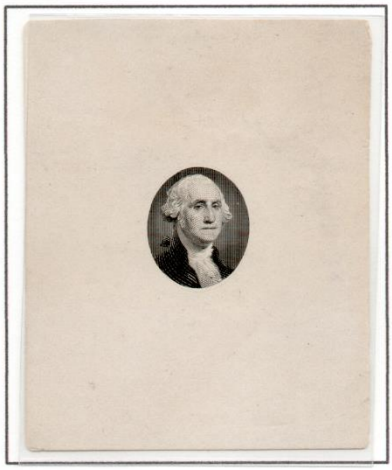
Die on white card
Light blue and black

Blue
Die on white glazed paper



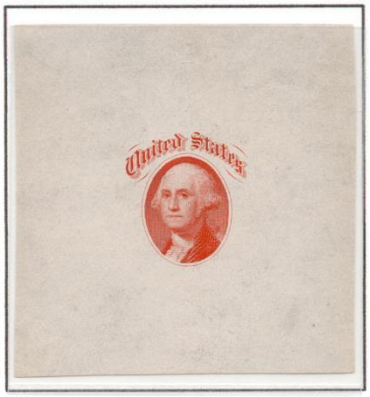
Light violet and brown
Untrimmed die on thin white paper

Black
Die on white glazed paper



Dies on white glazed paper

Brown



Scarlet

Blue

Patent description:

Patent 101,020 was for printing stamps in two colors, the first of which would be *'... soluble under the action of alkaline agents... with another, sensitive to the action of acids... My invention also includes the introduction and use of inks of the most permanent kinds known in combination with those inks already referred to...'*

From Jones's letters patent dated ***March 22, 1870***

1870 Jones patent 101,020 (with Willcox patent 115,005)

Jones's fugitive inks combined with Willcox's 'chameleon paper' adopted for revenue stamps

1871 Revenue plate proofs: imperf imprint blocks

Proprietary tax

1c Claret and black
On card

Internal Revenue

6c Green and black, on card

Internal Revenue: *4c Brown and black on India*

Patent description:

Patent 115,005 was for chemically altered paper *'... sensitive to the action of acids, alkalis, ammonia, and other chemicals competent to remove ink from paper... The paper is colored or tinted with two or more coloring or tinting substance... In my improved paper I aim at obtaining special colors as the results of special agents.'*

From Willcox's letters patent dated ***May 16, 1871***

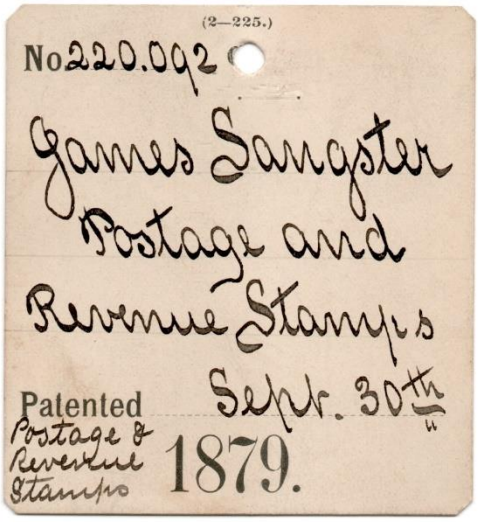
1879 Sangster patent 220,092 – stamps change color when washed with water

Granted 30 September 1879

Fig. 1 Fig. 2

Illustration from Sangster's patent:

Figure 2 shows the stamp after an attempt has been made to wash off the cancelling ink.



The unique model from Sangster's submission

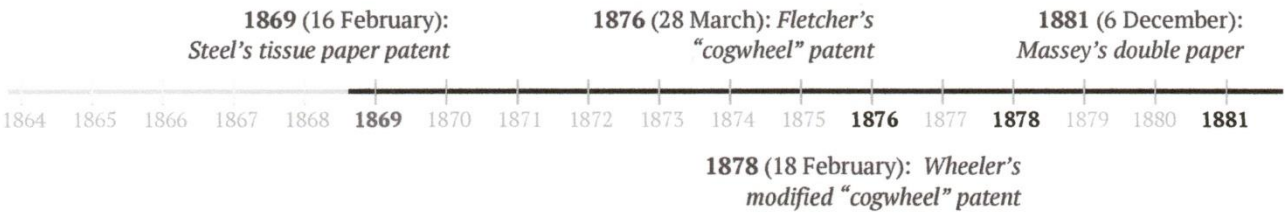
Illustrates the patent with CBNC Bank Note stamps. No other essays are known.

Patent description:

Patent 220,092 was for a stamp printed with fugitive ink: *'... it consists of a postage or other stamp having lines... ruled or otherwise place on its surface that... changes the oily or fatty or resinous matter in the ink... There are many of the alkalis that may be used for this purpose...in practice I find that caustic soda answers a good purpose'*

From Sangsters's letters patent dated ***July 9, 1879***

Key dates



1869 Steel patent 86,953: soft pink or white paper on stamp paper

Printed in black, perf 12, gummed, experimentally cancelled

Corner turned over to show the two papers

1873
Brown

e: PSE

Perf 12
Double paper variety

Research: the story of Steel's "double-paper" patent

November 2 1868: letter from Zevely (POD) to Charles Steel (NBNC)

*"It seems hardly worthwhile to talk with you alone about a new kind of stamp, just at the moment that a contract is ordered with the NBN Co. yet... your ideas seem very good... **let the Co. propose it instead of embossing**."*

February 6 1869: letter from Maun (NBNC) to Zevely (POD)

*"It is proper to say that we have already had some hundred sheets of paper prepared after the manner proposed by Mr. Steel & under his direction for **a double paper for stamps**, and are proceeding with experiments in printing etc. to test its practicality."*

April 20 1875: letter from Ireland (3rd Assist PM General) **condemning the double paper stamps**

"In many cases the two different papers have separated by whole sheet; but more commonly the face has become detached by fragments... it is very certain that Mr Steel's patent can be of no practical use."

Patent description:

Patent 86,952 combined a hard paper back to prevent the gum from showing through; with a blotting paper front. The blotting paper would **absorb** the cancel and **disintegrate** if attempts were made to remove the cancel.

*Steel's letters patent dated **February 16, 1869***

1876 Fletcher patent 175,242 – for a stamp "cut through in radiating lines"

Only known example of the **Fletcher "cogwheel"** on cover e PF

Fletcher argued that cutting the stamp would weaken it.

It would be impossible to soak off an envelope without irreparable damage.

Two 1873 3c stamps pay double postage to Ottawa, Illinois

Patent description:

Patent 175,242 was for '*... cutting entirely though the paper...*' of a stamp '*... in such a manner as to render it almost impossible to remove the stamp in an entire condition after being... applied...*' to an envelope.

From Fletcher's letters patent dated ***March 28, 1876***

1878 Wheeler patent 212,416 – for a stamp having "cut or punctured lines"

1873 1c Gray-blue
Perf 12, gummed

e PF

Wheeler suggested adding fugitive ink to the blade of the cutting instrument to make it impossible to clean the stamp.

Patent description:

Patent 212,416 was for '*... making cuts in a stamp and simultaneously applying an auxiliary fugitive color to said cuts.. For the purpose of preventing same from being reused after cancellation.*'

From Wheeler's letters patent dated ***February 18, 1878***

1881: Massey's "double paper" patent 250,376

Research: for decades these experiments were **mistakenly attributed to Douglas.** In my book I prove that they are in fact experiments for Massey's patent.*

1881 1c gray blue: perf 12, gummed, top layer punched with 8 small holes

Top layer of tissue paper

Bottom layer of stamp paper

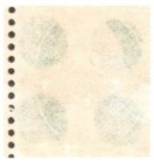
i. The top layer of the stamp consists of tissue paper with holes in it. The bottom layer consists of normal stamp paper.

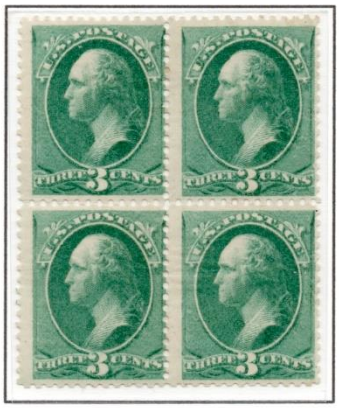
ii. When the stamp is printed, most of the design falls onto the tissue paper. Small parts fall through the holes onto the stamp paper below.

iii. The idea is that any attempt to clean a cancellation off the stamp, will be visible because it will destroy the tissue paper.

1881 3c blue green: perf 12, gummed, top layer punched with 4, 8, and 9 small holes

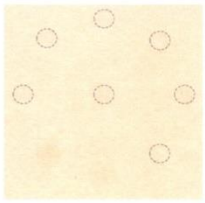
4 holes





8 holes

9 holes



Scans from the back show the holes. The 9 hole sample used thicker stamp paper. This makes the holes harder to see.

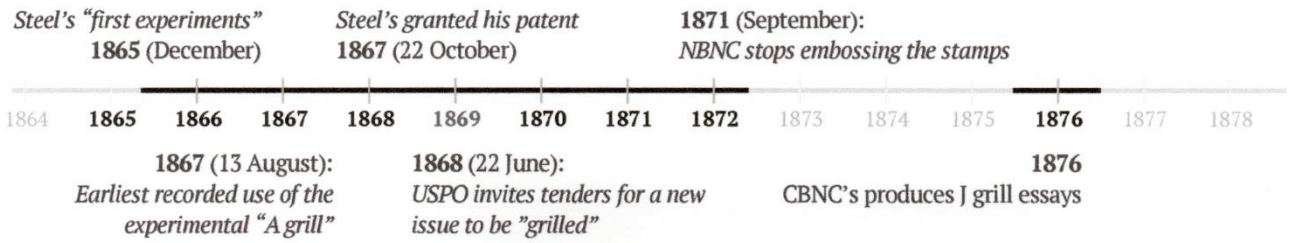
Patent description:

Patent 250,376 by Gideon Massey consists of *'... two superposed sheets of paper, the outside sheet being perforated to form one or more holes through it near the center of each stamp, the same to be secured to the bottom sheet... in such manner as to leave the* (top sheet) *free to be torn or mutilated...'* by cancellation.

From Massey's letters patent dated ***December 6, 1881***

* Hofmeyr, Jan (2024), Philatelic Invention to prevent Stamp Reuse in the United States: 1861 – 1881, pp. 110-111

Key dates

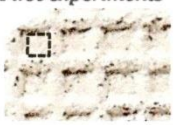


Steel's patent 70,147 for "an improvement in the manufacture of postage stamps" was the only patent adopted by the POD for general use.

24 February, 1867: privately cancelled cover on the eve of the grilled stamp experiment

Magnified scans show how the 'grill' evolved*

Late 1865
Flat square, points down
First experiments



Early 1867
Pyramid-shaped 'biscuit grill'
'A' and 'C' grill

Late 1867
Flattened pyramid
Steel's patent design

Early 1868
Horizontal 'rooftop' grill
'Z' grill

Patent description:

Patent 70,147 is for an embossed stamp. To quote Steel *'... my invention consists in embossing or partially breaking the paper... This causes the stamp, label, etc., to stick better, and allows the oil of the cancelling-ink, when such is used, to strike in very deeply.'*

From Steel's letters patent dated ***October 22, 1867***

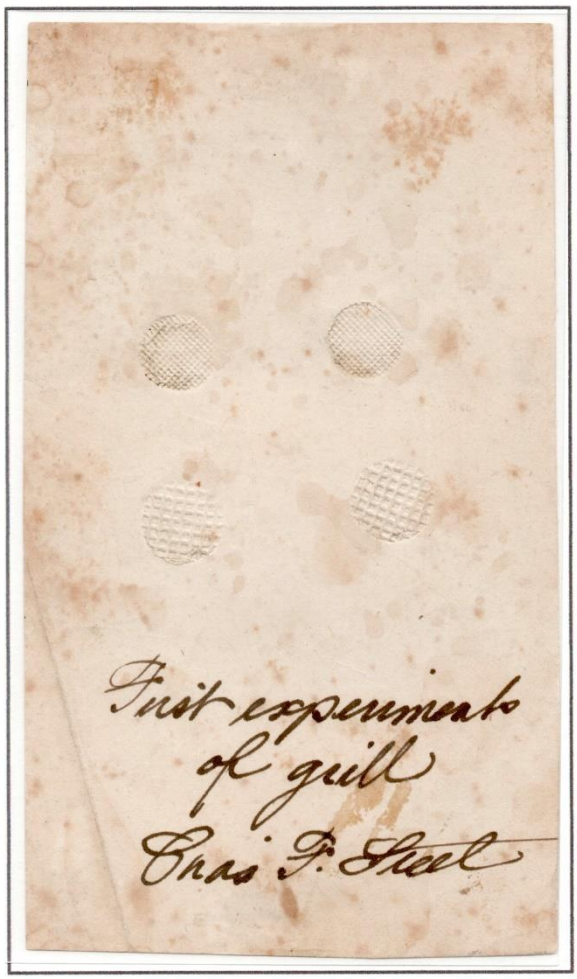
* See: **Hofmeyr, J.H.** (2018), *'Archival History of the Embossed Stamps of 1867-68,'* The Chronicle, 70:4.

Steel's grill concept

Charles Steel was in charge of the NBNC's Postage Stamp Department. His idea for a stamp that could not be cleaned and reused was relatively simple: if you **break the fibers** of the paper, canceling ink should **seep into the stamp** and make it impossible to clean.

1865: Steel's first experiments: indented squares on white wove paper, ungummed

Two recorded



Ex-
Finkelburg

On wove paper. Circles 11mm or 12mm

In a letter dated 20 December 1865, Zevely acknowledged receipt of Steel's samples: *"Sir... acknowledging the receipt of the samples of stamps submitted by you, with which I am favorably impressed. (But)* ***no judgement can be formed****... until they have* ***passed certain tests****."*

1865/6 Steel patent 70,147 – the earliest experiments used flat indented squares

On white wove paper: ungummed

Magnified scan of the earliest grill

One recorded

Ex-
Brazer
Finkelburg
Drews

Imperf

Embossed circle surrounded by perforations

Two recorded

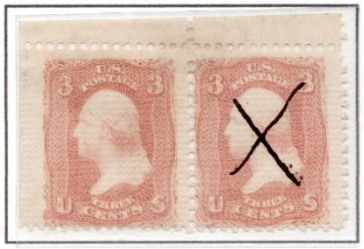
Ex-
Finkelburg
Lake Shore

Imperf

***Red '3'** in circle **tests printing** on a grill surface*

Tests of cancellations – to see if the embossed area absorbed the ink

Perf 12
Gummed



Tests a **pen** *and* **ink** *cancel*

The only recorded pair e: PF

Perf 12
Ungummed

Cancelled: NY segmented diamond (mid- 1867)

An experiment using a plate of the 1861 3c stamp

Imperf, gummed

1865/7: Tests of Engraved and Surface printing on **flat raised squares**

Engraved printing on raised squares: some with pen and ink cancellation tests

1. Plate proofs: imperf, gummed

Rose

Ink cancel test 'No 2'

2. Stamps: perf 12, gummed

Rose
Imprint block

Black

Surface printed specimens: from a shipment of samples sent by NBNC to POD in November 1867

Carmine
Imperf, gummed

Research: The push for a surface printed stamp

From Steel's patent: a call for surface printing

"... in my stamp, made in the manner which I most prefer, the paper is ***not compressed by the plate...****"*

6 November 1867: letter from Zevely (POD) to Maun (NBNC)

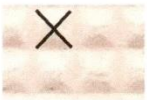
"Be pleased to prepare specimens fully according to Mr Steel's plan which... will require surface printing"

16 November 1867: letter from Maun (NBNC) to Zevely (POD)

"... I have the pleasure to enclose... sample No. 3 surface printed – embossed after printed and gummed..."

1866 Steel patent 70,147 – in 1866 or early 1867, the A grill replaced the flat squares

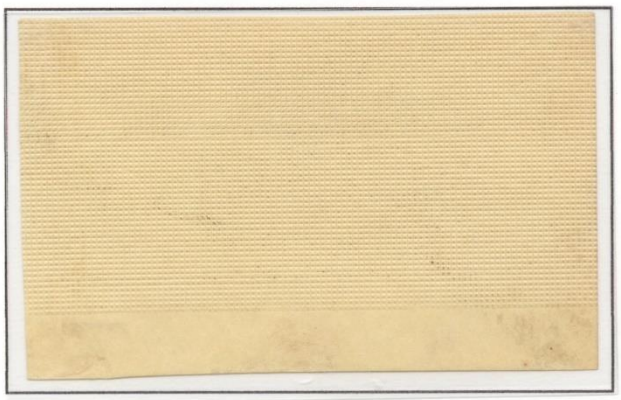
The Pyramid shaped A grill



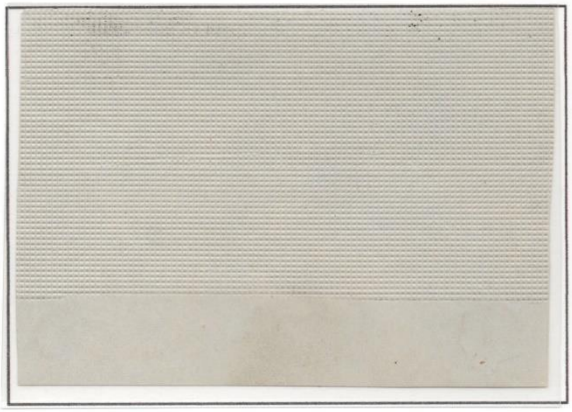
Scan of the pyramid grill

Essays produced by Steel at the NBNC

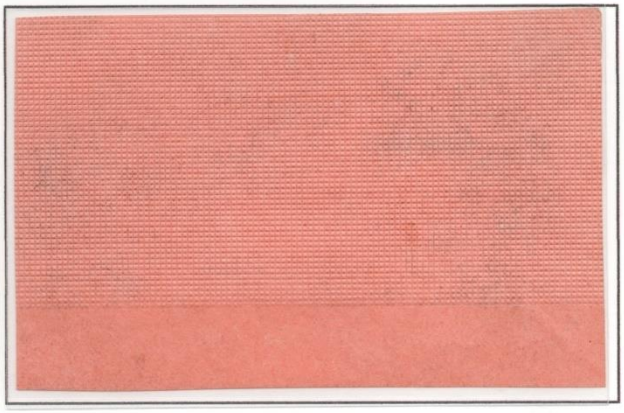
On tinted papers
Imperf and ungummed



Light yellow



Light gray green



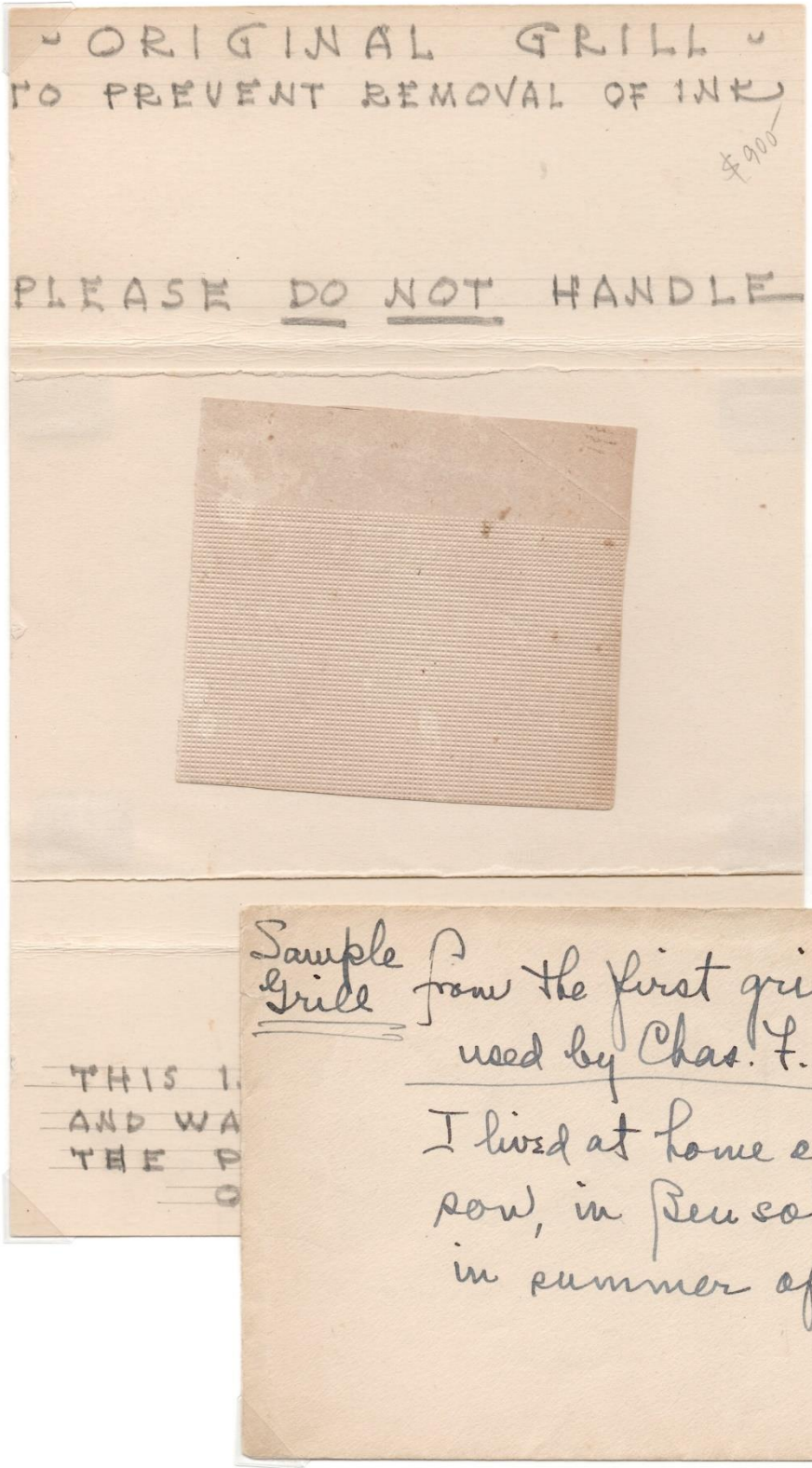
Salmon

An A grill test of **surface printing** and **pen and ink** cancellation: imperf and ungummed

47 x 24 mm grill area
White wove

Ex-Drews

This **important essay** tests both **surface printing on an embossed paper** and **pen** and **ink** cancellation



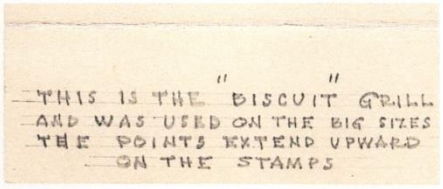
A grill essay
With a personal connection to Steel

e: PF

On thick card (70 x 60 mm). Ungummed. Points up.

The owner claimed it was given to him when he lodged with Steel's son in 1904/5.

Scan of the bottom of the card



On **26 July 1867** **Zevely** suggested the production of **A grill stamps** for postal testing

Quote: *"After due inspection... I am free to say that the embossed stamps are **more desirable** than any heretofore submitted... I suggest that 10,000 sheets of the 3-cent be printed..."*

A grill plate proofs: bright rose. Imperf, gummed, points up. Printed on dry paper.

Earliest known use: from **13 August 1867**, experimental A grill stamps were in use

Four covers recorded

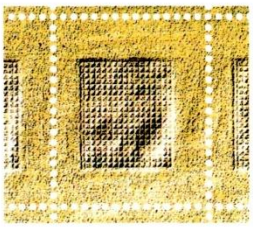
3c pays the ½ oz domestic letter rate

On **7 October 1867** Zevely rejected the A grill

Quote: *"I am awaiting anxiously the speciments with embossed center... The stamps with the entire surface embossed* ***will not meet the needs of the department****."*

C-grill: 13 x 16mm, points up

A complete pane: folded and turned sideways



A scan shows how the grill would be centered in a stamp (22 x 27mm)

Only remaining pane

Ex-Earl of Crawford Drews

This sheet was part of a complete sheet of two.

The Philatelic Foundation retains the second, but cut it into squares for research.

1867: C grill pressure tests

Research: the grill had to be flattened for printing

1. No pressure

Pale pink tinted

Mauve tinted

2. Some pressure

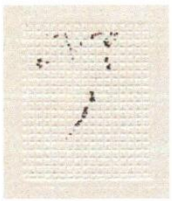
White wove

3. Sustained pressure **Two recorded**

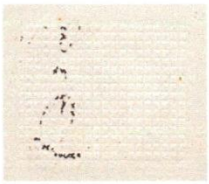
Approved: by officers of the NBNC

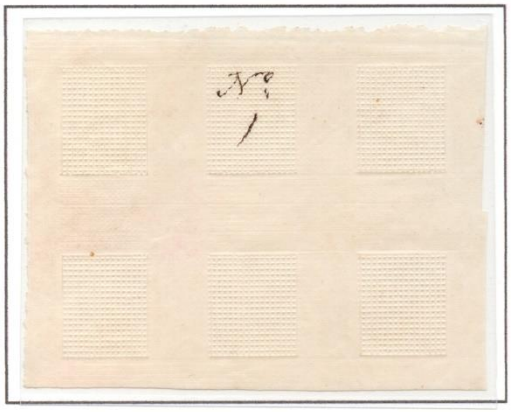
C grill permeability tests: 'No. 1' tests an unflattened grill; 'No. 2' tests a flattened grills

Research: Steel was worried that the flattened grill would not absorb cancelling ink. These two essays test absorption for an unflattened (No. 1) and flattened (No. 2) grill.



1. Scans from the back show to what extent the ink bleads through.
2. The flattened grill is marginally **less permeable** than the unflattened one.





Imperf, gummed

On **16 October 1867** Zevely ordered **one million C grill stamps**

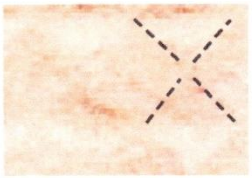
Quote: *"... be pleased to cause 1,000,000 three cent stamps* ***with embossed centres*** *to be printed from the die at present in use, without delay..."*

C grill essay: points up, perf 12, ungummed

From the Steel family archive

C-grill essay: perf 12, ungummed
Points down

Points down
Show as raised from the back



A scan from the back shows the raised pyramids of "points down"

Research: during trials, Steel changed from points up to points down

1. Steel produced the A grill **points up** because he thought it would present a better surface for printing, but the failure of the grill to absorb cancelling ink led him to change his mind.
2. He therefore switched to **points down** for all the production grills because he thought it would make the stamps more likely to tear if an attempt was made to peel them off an envelope for cleaning and reuse.

C grill plate proof and issued stamps: the C grill was printed on damp paper

Plate proof
Imperf, gummed, points up

The issued stamp
Perf 12

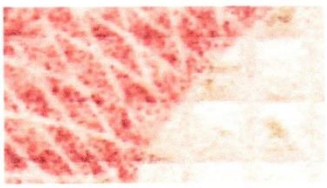
'Bluebird' of Rockford fancy cancel

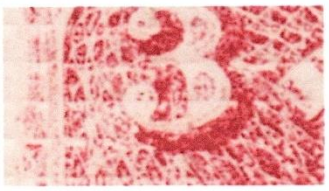
Grill variety

Double grill, one split

C grill plate proof

Printed on damp paper





A grill plate proof

Printed on dry paper

Research: A brief trial of engraved printing on dry paper

1. Steel wanted the grills to be printed on dry paper because he wanted to gum them before printing
2. But engraved printing typically produced poor images when printed on dry paper
3. The A-grill proofs were printed on dry paper, but that NBNC switched back to damp paper for the C-grill.

On **22 October 1867** Zevely ordered NBNC to produce surface printed stamps

Quote: *"I told Mr. Man (of the NBNC) that... the P.M.G. (is) favorably disposed... I also told him that **surface printing is wanted**, & he gave me to understand that it was contemplated...."*

C grill experiments with a **design** derived from plates of the **1861 3c stamp**
On various tinted papers

i). **Points up:** *Imperf and gummed*

Black on Lilac grey

Dark blue on White

Dark blue on Pale blue

ii). Perf 12 and gummed on grey-green chemical paper

Points down

Blue

Orange

Black

Olive green

Points up

Green

Research: here I prove that some of these experiments were in fugitive ink

Discovery: The stamp has been wiped with a damp cloth to show that the ink is fugitive

On 23 October 1867

Zevely wrote to Steel: *'... I told Mr. Maun... that he should try **the combination** of McDonough's ideas with yours. I also told him that **surface printing** is wanted...'*

This **lithographic essay** based on the 1861 3c stamp **combines** the Cgrill with a light blue fugitive ink.

C grill shades

Points up: on white wove, perf 12, gummed


Brown


Red


Yellow


Light blue


Orange


Dark green


Light green


Reddish pink

Points down: on white wove, perf 12, gummed


Black


Yellow


Dark green


Red


Dark blue


Brown


Very light pink


Pink

C grill multiples

Points down: on white wove, perf 12, gummed

Pinkish red

Brown

Light blue

Yellow

Lighter red

Dark blue

Black

Darker red

Scans of the back

'S No 6' on the back. The purpose unknown

C grill multiples

Points up: on white wove, perf 12, gummed

Dark blue

Dark brown

Orange

Dark grey

Yellow orange

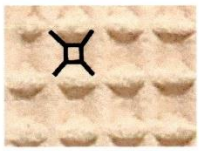
Red

Pen and ink cancel tests the permeability of the grill

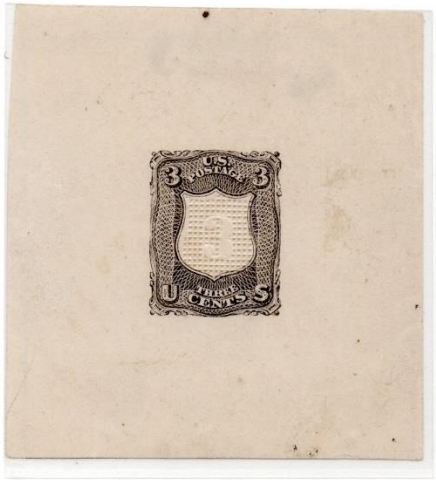
Dull blue

On **22 October 1867** Steel's patent 70,147 for an embossed stamp was granted

- Steel's idea (see **reference** below):
  - To use lithographic printing for the design
  - To leave the center portion blank for embossing
  - To use chemically sensitive or yellow, tinted paper
- **The essays on this page best represent Steel's patent**



These essays mostly use a flattened pyramid



Black on white wove

Deep pink on white wove

Black on yellow-orange wove

Black on *Yellow wove*

Deep pink on *Yellow-orange wove*

Research: according to correspondence in the Brazer archive, these '3 in shield' essays date to the middle of November 1867*

* Hofmeyr, Jan: *'The Neglected Details of Charles Steel's Patent for Grilled Stamps'*, Chronicle 71: 2, May

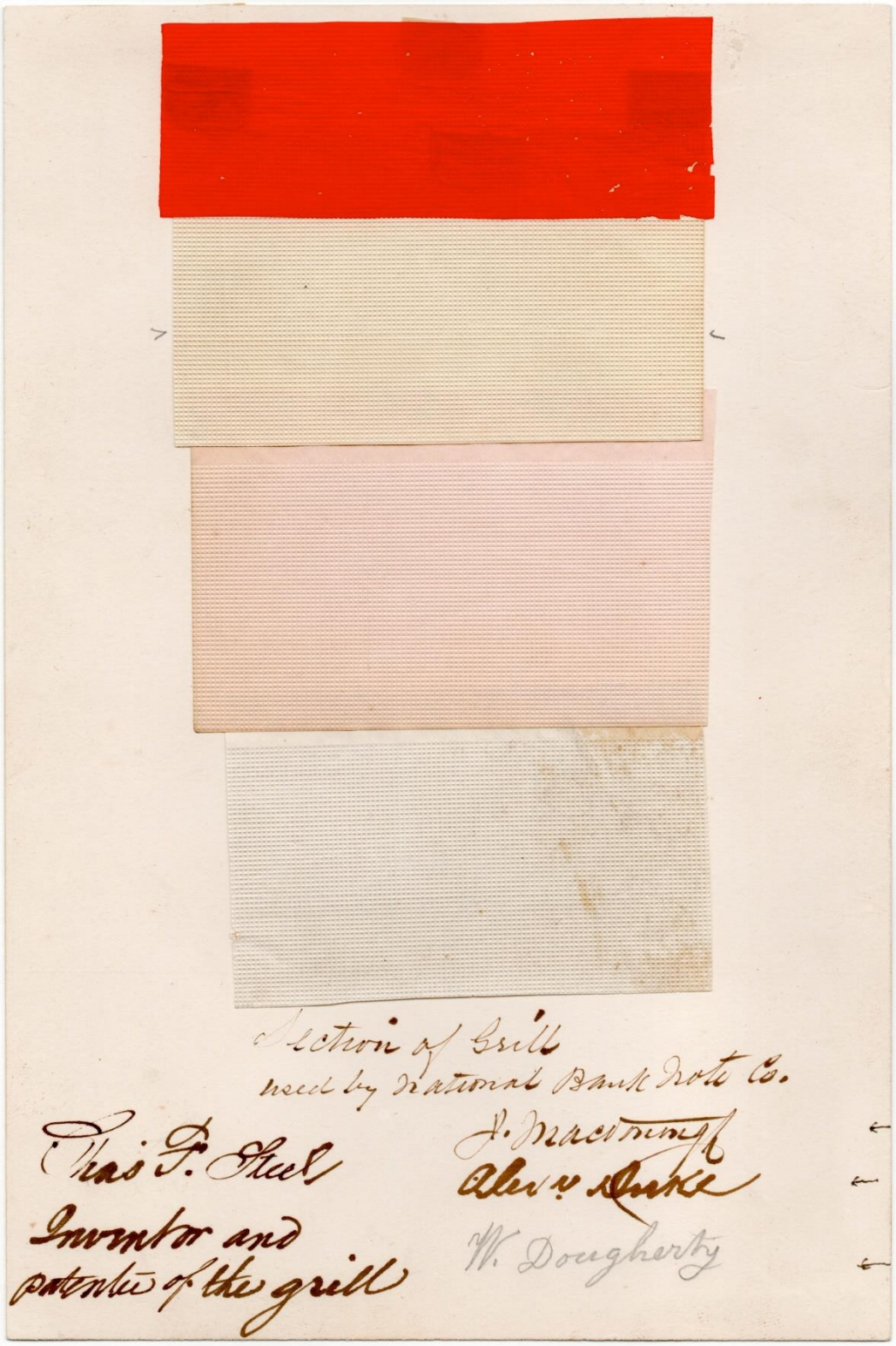
On **23 October 23**, Zevely wrote to Steel to let him know that NBNC would at last recognize his patent saying *"I think your company will finally do you justice."*

Ex-Finkelburg

The only essay signed by the NBNC, recognizing that Steel invented the 'grill'.

Steel had been trying to interest the NBNC in his 'grill' idea since 1865.

Zevely's letter helps to date the essay.



Ungummed "Biscuit" grill on colored papers stuck to card

On **6 November**, **MacDonough** invited Steel to show him '**ideas**' for a **new stamp**

*"Friend Steel... whenever you can find time to come over and see me please do so, **bringing your ideas** (if you have any) for the stamp you desire to have made...'*

One recorded

Faded red-brown
Die on gray wove paper

Ex-Drews

The faint but **important** pencil note records 'Steel Nature' and is **signed by MacDonough**

On **15 November**, **MacDonough** wrote to Steel about the **NBNC's experiments**

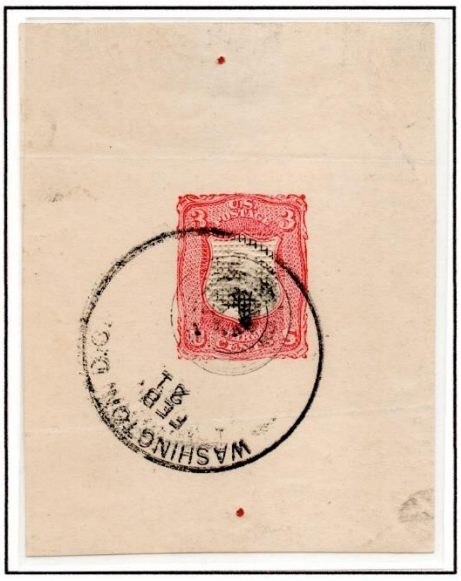
*"I send you the first impression made under your instructions... **The die must be deepened** around the figure '3'..."*

Two recorded

One recorded

Deep pink
On yellow laid paper
Partially gummed

Ex-Finkelburg



Deep pink
On white wove
Gummed

The hand-colored '3' appears to be an attempt to **fix the problem** noted by MacDonough

This essay **test-cancels** Steel's design

1867 (November): Additional essays for Steel's surface printed design

1. Steel used a **flattened pyramid** for his **"3 in circle"** experiments

'3 in circle' grill.
Tan paper, perf 12, gummed

Steel's patent calls for **pressure** to flatten the embossing.

This essay records *'a half hour's pressure after embossing'*

2. **Model:** He created a model combining his **"shield" frame** with the embossed **"3 in circle"**

Orange paper, frame in **red**.

Tests **pen** and **ink** cancellation

A magnified scan shows the overlapping perfs

3. He tested his typographic **"shield" design** in blue with **earlier grills**

Flat square grill

This fragment from Steel's patent submission fragment is **only one known**

Yellowish paper
Imperf, ungummed

Blue on white wove
Imperf, gummed

'All over' pyramid grill

Scratch pattern experiments (undated)

Research: as the correspondence in the **Brazer Archive** suggests, NBNC did not support Steel's proposal. These **'punctured paper' essays** appear to be an attempt to **sidestep Steel.**

Scratch pattern grills (undated): imperf and ungummed on white wove paper

Ex- Brazer, Finkelburg, Drews

One of each **recorded**

Oval

Mainly horizontal scratches

Cross

Short vertical scratches

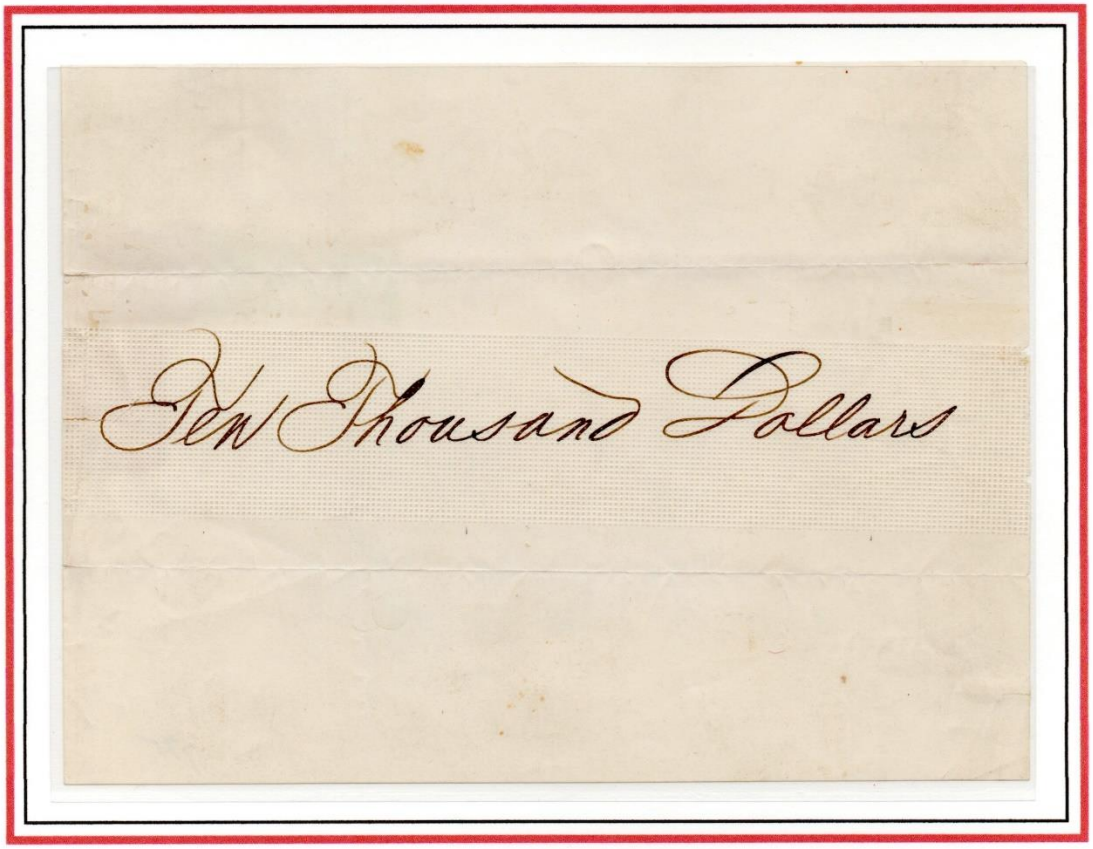
Oval

Star

Greek-style pattern

Punched horizontal slits: imperf, ungummed

One recorded



Hypothesis
A test of the grill for cheque books

The "Music Box" grills: plates of the 1861 3c stamp

One imperf essay recorded

Points down
Rose, ungummed
Regular pattern

e: PSE

Pen cancel test of the pin holes

Imprint pair

Points up
Irregular pattern
Rose

Imprint block

Points down
Irregular
Rose

Two recorded

Points down
Irregular
Rose

CDS: Sept 24, 1867. New York

Points up
Irregular, Rose

Points down
Regular
Rose

On **16 December 16**, Zevely ordered **D and Z grill experiments** on **tinted papers**

Quote: The paper *"... should be very slightly* ***tinted*** *in various colors* ***to suit the colors of the stamps...*** *affording additional protection against all attempts to remove the cancelling marks"*

D grill: 1c frame on stamp paper: imperf or partially perfed 12, gummed

Red brown on *Pink*

Red brown on *White*

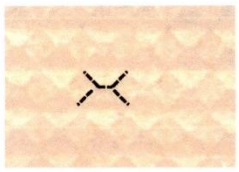
Red brown on *yellow*

Two recorded

Ex-Lake Shore

Brown red

Z grill: 3c on various tinted papers: gummed, perf 12



A scan shows the **'rooftop'** shape of the Z-grill

Sample of the Z-grill on white wove

Green on *Green*

Red on *Salmon*

Red on *Straw*

Brown on *Straw*

Red on *Yellow*

Brown on *Yellow*

Black on *Yellow*

Brown on *Violet*

Red on *Violet*

On **January 14 1868,** Boyd reported to Zevely that **tinted paper trials** were underway

3c on various tinted papers: gummed, perf 12

Brown on *Pink*

Black on *Yellow*

Red on *Green*

Note: Although the Scott catalogue lists the blank essays separately, the marginal block suggests that they are probably marginal stamps from normal plate proofs

Dull tan

Straw

Green

Brown on
Salmon laid paper

Salmon laid: one stamp stained

Yellow

Pale lilac laid

Z grill essays using the 12c stamp of 1861

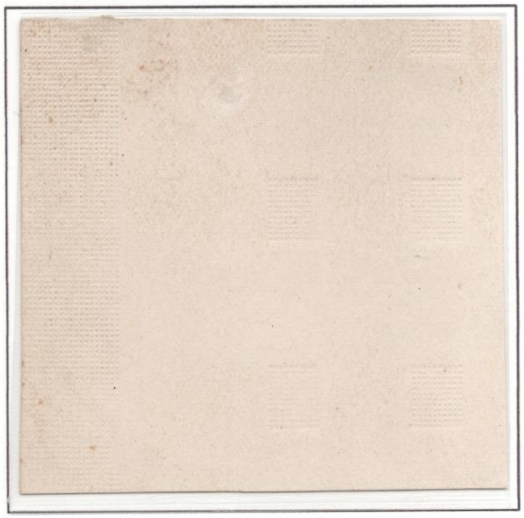
On various tinted papers, perf 12, gummed

J grill essay: on soft card from what was a full sheet

In 1887, John Luff noted the existence of a blank J grill sheet on soft card.

Subsequently it appears to have been cut up into pieces.

The J grill has a flat-square shape but is smaller than Steel's early flat-square grills



* See: **Hofmeyr, J.H.** (2018), *'Archival History of the Embossed Stamps of 1867-68,'* The Chronicle, 70:4.

The first and last of the production grills: the Z and the I

The Z grill: January 1868

11 x 14 mm

2c Black
Perf 12

e: PSE

e: PF

3c Rose
Perf 12

The I grill: mid-1870 to late 1871

8.5 x 10 mm

1c Ultramarine: Perf 12

2c Red brown
Perf 12

3c Green
Perf 12

6c Carmine
Perf 12

7c Vermillion
Perf 12

10c Brown
Perf 12

1874: Peru adopted the grill idea

1c Orange
Perf 12

2c Violet
Perf 12

5c Pale Blue
Perf 12

5c Blue
Perf 12

10c Slate
Perf 12

10c Green
Perf 12

20c Brown red
Perf 12

50c Green
Perf 12

$1 Rose
Perf 12

* See: **Hofmeyr, J.H.** (2018), *'Archival History of the Embossed Stamps of 1867-68,'* The Chronicle, 70:4.

Epilogue: the POD's experiments to prevent reuse ended with th 1890 series

Although the last essayed patent was Massey's in 1881, the design for the U.S.A.'s definitive issue remained unchanged until a new series was introduced in 1890. The POD's experiments to prevent reuse therefore ended with the 1890 definitives.

1890-93: Used, perf 12

1c Dull blue
EKU: 27 Feb 1890

2c Lake
EKU: 22 Feb 1890

2c Carmine
EKU: 18 Feb 1890

3c Purple
EKU: 28 Feb 1890

4c Dark brown
EKU: 16 July 1890

5c Chocolate
EKU: 14 June 1890

6c Brown red
EKU: 8 May 1890

8c Lilac
EKU: 21 March 1893

10c Green
EKU: 5 March 1890

15c Indigo
EKU: 16 May 1890

30c Black
EKU: 14 April 1890

90c Orange
EKU: 16 May 1890

Bureau of Engraving and Printing

This was the first definitive series to be printed by the **Bureau of Engraving and Printing** and the first since 1861 that was not subjected to some sort of reuse prevention experiment. It signalled the end of the era of the Bank Note printers for stamps and is therefore a fitting end to this exhibit.